FINAL

Appendix A to I

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JULY 2008

COYOTE SPRINGS INVESTMENT

PLANNED DEVELOPMENT PROJECT

Coyote Springs Investment Planned Development Project

Appendix A to I

July 2008

Prepared EIS for:

LEAD AGENCY
U.S. Fish and Wildlife Service
Reno, NV

COOPERATING AGENCIES
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COYOTE SPRINGS INVESTMENT PLANNED DEVELOPMENT PROJECT

Appendix A to I

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APPENDIX H

Investigation of the Presence of Wetlands and Other Waters of the US within the Coyote Springs Area, Lincoln County, Nevada

INVESTIGATION OF THE PRESENCE OF WETLANDS AND OTHER WATERS OF THE UNITED STATES WITHIN THE COYOTE SPRINGS AREA, LINCOLN COUNTY, NEVADA

(All or Portions of:
Sections 13-36 Township 11 South, Range 63 East,
Sections 1- 30, 32 - 36 Township 12 South, Range 63 East,
Mount Diablo Base and Meridian)

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June 2007 Update

Disclaimer

On June 5, 2007, the United States Army Corps of Engineers and United States Environmental Protection Agency issued guidance to their field offices on how to implement the decisions of the Supreme Court in *Rapanos v. United States* and *Carabell v. United States*. This guidance is intended to reflect and consolidate the differing non-majority views of the Court regarding the reach and extent of the Clean Water Act, particularly over non-navigable tributaries and their adjacent and non-adjacent wetlands. Neither the Court nor the recently-issued guidance draw a bright line with regard to the geographic reach of jurisdiction, particularly in drainages where flows are ephemeral, such as all of the drainage features found on the Coyote Springs property. The Huffman Broadway Group, Inc., Resource Concepts, Inc., and Coyote Springs Investments have made a good-faith effort herein to thoroughly describe and document the presence of potential factors that the Corps may consider to constitute a "significant nexus" to traditionally-navigable waters in asserting jurisdiction pursuant to Section 404 of the Clean Water Act. Nevertheless, the project sponsor, Coyote Springs Investments, reserves the right to challenge or seek revision to any areas over which the Corps may assert such jurisdiction, as the implementation of the Rapanos and Carabell guidance is further clarified or altered through formal guidance, assertions or disclaimers of jurisdiction over other properties, court decisions, or other relevant actions. In particular, the threshold of what may or may not constitute a "significant nexus" to a traditionally-navigable water is, at present, undefined and unquantified. Should an actual threshold be established with some reasonable degree of quantification, areas on the Coyote Springs property over which the Corps may now seek to assert jurisdiction should not remain jurisdictional if they do not exceed that minimum threshold in the future.

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TABLE OF CONTENTS

LIST OF ATTACHMENTS

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1.0 INTRODUCTION

1.1 Purpose and Scope of Work

At the request of Coyote Springs Investment (CSI), The Huffman-Broadway Group, Inc. (HBG), and Resource Concepts, Inc. (RCI), conducted an investigation of the geographic extent of wetlands and other waters of the United States subject to U.S. Army Corps of Engineers (Corps) jurisdiction on an approximately 29,688 acre area in the northern portion of the Coyote Spring Valley, Lincoln County, Nevada.[1] An initial delineation report, entitled *Investigation of the Presence of Wetlands and Other Waters of the United States, Within the Coyote Springs Area, Lincoln County, Nevada* and dated December 2006 for Corps review. After comments were received from the Corps and EPA the report was revised to respond to agency comments regarding the landward extent of the regulated boundary of various desert dry wash drainages identified in the December 2006 report and the need to provide a significant nexus determination. The investigation was conducted in accordance with (1) the 1987 *Corps of Engineers Wetlands Delineation Manual* (Corps, 1987), Code of Federal Regulations (CFR) definitions of jurisdictional waters, (2) supporting guidance documents (e.g., Corps, 1992b), including the Corps' *Final Summary Report: Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest* (Corps, 2001), (3) Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (Corps) Memorandum Regarding *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (June 5, 2007), and (4) U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (Corps) Memorandum Regarding *Coordination on Jurisdictional Determinations (JDs) under Clean Water* (June 5, 2007)

Attachments 1 and 2 show the general location of the Coyote Springs development area investigated (study area), which comprises all or portions of Sections 13-36 Township 11 South, Range 63 East and Sections 1- 30, 32 - 36 Township 12 South, Range 63 East Mount Diablo Base and Meridian. Attachment 2 is a U.S. Geological Survey topographic map showing the Study Area.

1.2 Background

In 1988, Aerojet and the United States Department of the Interior completed a land exchange agreement, whereby Aerojet obtained a 99-year lease with an option for a 99-year renewal on ±13,767 acres in Lincoln and Clark counties, Nevada, as well as title to ±29,055 acres of fee land in those counties. In Lincoln County this equates to approximately 22,174 acres of fee land and approximately 7,548 acres of leased land. In Clark County there are approximately 6,881 acres of fee land and 6,219 acres of leased lands. In exchange, Aerojet relinquished title to ±5,000 acres in the Florida Everglades. Congress enacted *The Nevada-Florida Land Exchange Authorization Act of 1988* (Public Law 100-275 [NV-FL Act])[2] to authorize the land exchange.

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1 This report should be cited as: The Huffman-Broadway Group, Inc and Resource Concepts, Inc. 2007 Update. *Investigation of the Presence of Wetlands and Other Waters of the United States, Within the Coyote Springs Area, Lincoln County, Nevada*. Prepared for Coyote Springs Investments. June 2007.San Rafael, California. 35 pp. plus attachments.

2 Public Law 100-275 (102 Stat. 52), approved March 3, 1988, authorized approximately 38,400 acres of BLM land in Nevada to be exchanged to the Aerojet-General Corporation for approximately 4,650 acres of Florida wetlands owned by Aerojet. It

In 1996, the Secretary of the Interior approved the assignment of the lease from Aerojet to Harrich Investments, LLC. In 1998, the Secretary approved the assignment of the lease and all its rights from Harrich Investments, LLC, to CSI in accordance with the NV-FL Act.

The delineation approach used herein is based on previous field meetings in 2004 and established approach rationale developed with the Corps during the preparation of the delineation of areas subject to Corps jurisdiction within the adjacent Clark County Coyote Springs project. This included using where appropriate the guidance document *Final Summary Report: Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest* (Corps, 2001) and the "*Regional Supplement to the Corps of Engineers Wetland Delineation Manual Arid West Region*" (2005 draft). The boundaries for the area of study are shown in Attachments 1 and 2. This area includes the 29,722-acre Coyote Springs area in Lincoln County described above and a 3,331-acre utility right-of-way located to the west of U.S. Highway 93.

1.2.1 Contact Information

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1.2.2 Directions to the Site

Directions to the Coyote Springs Property are presented below. Attachment 1 is a regional road map.

From St George, Utah:

- Take I-15 South toward Las Vegas.
- Take State Route 168 to US 93.
- Turn right on to US Route 93.
- Arrive at the Lincoln Clark County line.

specified that the Florida land would then be sold to the South Florida Water Management District, with the revenue to be used by the U.S. Fish & Wildlife Service for purchase of in holdings at Florida refuges. (*See* http://laws.fws.gov/lawsdigest/landex.html)

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From Las Vegas, Nevada:

- Take I-15 North from Las Vegas.
- Take US-93 towards Pioche/Ely.
- Arrive at the Lincoln Clark County line.

1.2.3 Interstate/Foreign Commerce Connection

Waters from the Coyote Springs study area flow into the Pahranagat Wash. During large storm events (e.g. 10-year events or larger), it is tributary to the Muddy River before it enters the Colorado River at Lake Mead, an interstate water (Stantec Consulting, 2001).

1.3 Environmental Setting

Topography. The area of study is located in the Pahranagat Wash watershed, bordered by the Sheep Range to the west and the Meadow Valley Mountains to the east. Elevation within the area of study ranges from approximately 2,250 to 2,800 feet. The project area consists of three primary topographical landforms: 1) alluvial fans, 2) badlands and 3) Pahranagat Wash. The alluvial fans slope from the eastern and western mountains toward the Pahranagat Wash . These upland fans are bisected with numerous dry washes and arroyos.

The area between the fans and the Pahranagat Wash is referred to as the badlands. The badlands are characterized by severe erosion and deep gullies. This formation consists of highly stratified sand, silt, and clay containing large amounts of gypsum and calcium carbonate that act as cementing agents. Slopes are commonly 15 to 50 percent, but can be as much as 100 percent in some areas. Runoff is rapid and the hazard of erosion is very high. The land is generally barren of vegetation.

The Pahranagat Wash is a predominantly dry wash that bisects the CSI lands as it runs from the northwest to the southeast.

Geology. The majority of the project area is dominated by three geologic units. The Pahranagat Wash and the lower portion of the tributaries consist of Quaternary (Holocene, younger than 10,000 years) alluvium. These materials are primarily unconsolidated stream-channel and fan deposits of clay to cobble-size, poorly sorted and generally undissected detrital materials in the active drainage channels. The Tertiary (2 to 23 million years old) Muddy Creek formation lies immediately adjacent to the washes and consists of lacustrine clay and silt and fluvial silt, sand, and gravel which is moderately well sorted and stratified. The upper alluvial fans in the project area are dominated by Quaternary and Tertiary (10,000 to23 million years old) alluvial fan deposits. These deposits are crudely stratified parallel to the fan surface and commonly deeply dissected. In places deposits are strongly cemented (USGS, 1993b).

Surface Water. There are no perennial surface waters within the project area. The Pahranagat Wash is an ephemeral tributary to the Muddy River before it enters the Colorado River at Lake Mead.

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Groundwater. The depth to groundwater below the Pahranagat wash is greater than 400 feet. This depth has been documented through numerous wells in the area (Johnson, 2005).

FEMA Flood Zone. The Area of Study is not mapped by FEMA. It is in zone D, "*Areas of Undetermined, but Possible Flood Hazard*".

Climate. The climate in the Plan Area is dry and hot in the summer, and cool in the winter. On average, temperatures range from lows of 26° F in December to highs of 97° F in July. The mean total annual precipitation in the vicinity of the project area is approximately 5 to 6.5 inches; however annual precipitation can vary greatly from year to year, ranging from 2 to 13 inches. Average monthly precipitation is less than 1 inch per month, with the maximum precipitation period occurring between November and March. The average frost-free period ranges from 200 to 250 days.

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2.0 REGULATORY FRAMEWORK

2.1 Definition of Wetlands and Other Waters of the U.S.

Section 404 of the Federal Clean Water Act authorizes the Corps to regulate activities that discharge dredged or fill material to wetlands and other waters of the United States. As described by EPA's and the Corps' regulations (40 CFR § 230.3(s) and 33 CFR § 328.3(a), respectively, the term "waters of the United States" encompasses the following resources:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
   i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
   ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
   iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in above paragraphs (1)-(4);
6. The territorial seas; and
7. Wetlands adjacent to waters identified in above paragraphs (1-6) except waters that are themselves wetlands.

EPA and the Corps define wetlands as: "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (EPA regulations at 40 CFR § 230.3(t); Corps regulations at 33 CFR § 328.3(b)).

2.2 Limits of Jurisdiction

The following provides the regulatory definitions and criteria followed in determining the geographic extent of potential EPA/Corps jurisdiction.

As described at 33 CFR § 328 and § 329, the geographic limits of relevant federal jurisdiction are defined in the following manner:

1. Non-Tidal Waters of the United States: "The limits of jurisdiction in non-tidal waters: In the absence of adjacent wetlands, the jurisdiction extends to the ordinary

high water mark, or [w]hen adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands. . . ." The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are "adjacent wetlands." The term "ordinary high water mark" means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

2. Wetlands: Implicit in the definition is the need for a site to meet certain water, soil, and vegetation criteria to qualify as a jurisdictional wetland. These criteria and the methods used to determine whether they are met are described in the Corps' 1987 *Wetlands Delineation Manual.*

2.3 Wetlands Delineation Criteria

The Corps' 1987 *Wetlands Delineation Manual* identifies the key diagnostic criteria for determining the presence of wetlands. These include:

1. Wetland Hydrology: Inundation or saturation to the surface during the growing season.

2. Hydric Soils: Soils classified as hydric or that possess characteristics associated with reducing soil conditions.

3. Predominance of Wetland Vegetation: Vegetation classified as facultative, facultative wet, or obligate according to its tolerance of saturated (i.e., anaerobic) soil conditions.

Specific criteria used to determine the presence or absence of wetland hydrology, soil, and vegetation conditions are as follows:

2.3.1 Wetland Hydrology

The 1987 Corps *Manual* states that wetland hydrology conditions occur when a "site is inundated either permanently or periodically at mean water depths less than or equal to 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation." Whether or not a site meets this criterion is determined by the presence of diagnostic indicators of wetland hydrology, which include the following:

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Table 1. Primary and Secondary Hydrology Indicators

Primary Indicators	Secondary Indicators
Watermarks	Oxidized Rhizospheres Associated with Living Roots
Drift Lines	Water-Stained Leaves
Water-Borne Sediment Deposits	FAC-Neutral Test
Drainage Patterns Within Wetlands	Local Soil Survey Data

A March 8, 1992, Corps memorandum entitled *Clarification and Interpretation of the 1987 Manual* provides further clarification:

> Areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days for more than 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas wet between 5 percent and 12.5 percent of the growing season in most years may or may not be wetlands. Sites saturated to the surface for less than 5 percent of the growing season are non-wetlands.

In Lincoln County, the length of the growing season is approximately 225 days; 5 percent of the growing season is 11.25 days.

2.3.2 Hydric Soils

The 1987 Corps *Manual* states that the diagnostic environmental characteristics indicative of wetland soil conditions are met where "soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions." According to the Manual, indicators of soils developed under reducing conditions may include:

1. Organic soils (Histosols);
2. Histic epipedons;
3. Sulfidic material;
4. Aquic or peraquic moisture regime;
5. Reducing soil conditions;
6. Soil colors (chroma of 2 or less);
7. Soil appearing on hydric soils list; and
8. Iron and manganese concretions.

A February 20, 1992, Corps memorandum entitled *Regional Interpretation of the 1987 Manual* states that the most recent version of National Technical Committee for Hydric Soils (NTCHS) hydric soil criteria will be used (to make hydric soil determinations). These soil criteria specify at least 15 consecutive days of saturation or 7 days of inundation (flooding or ponding) during the growing season in most years.
The concept of hydric soils includes soils developed under sufficiently wet conditions to support

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the growth and regeneration of hydrophytic vegetation. Soils that are sufficiently wet because of artificial measures are included in the concept of hydric soils. Also, soils in which the hydrology has been artificially modified are hydric if the soil, in an unaltered state, was hydric. Some series, designated as hydric, have phases that are not hydric depending on water table, flooding, and ponding characteristics. As indicated above, like the NRCS, Corps of Engineers has typically accepted guidance for the identification of hydric soils developed by the National Technical Committee for Hydric Soils (NTCHS). The NTCHS, a working group organized by NRCS, has developed criteria for identifying and mapping hydric soils throughout the United States and defines a hydric soil as "a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part [of the soil profile]" (http://soils.usda.gov/use/hydric/intro.html). The most recent (2000) version of the NTCHS hydric soils criteria identifies those soils that are likely to meet this definition. These criteria, which are accepted by most state and federal agencies, are as follows (http://soils.usda.gov/use/hydric/criteria.html):

1. All Histels except Folistels and Histosols except Folists, or

2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are:
    a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or
    b. poorly drained or very poorly drained and have either:
        (i). water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in),

        or for other soils

        (ii). water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or

        (iii). water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or

3. Soils that are frequently ponded for long duration or very long duration (7 to 30 days) during the growing season, or

4. Soils that are frequently flooded for long duration or very long duration (7 to 30 days) during the growing season.

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On the basis of computer database searches for soils meeting the second criterion, NRCS has developed hydric soils lists for many parts of the country. Although they are useful for determining whether a particular soil series *has the potential to support current hydric soil conditions*, caution should be used when using these lists for site-specific hydric soil determinations. Many soils on the lists have ranges in water table depths and other characteristics that allow them to be either hydric or nonhydric depending on landscape position and other site-specific factors (e.g., soil clay content, depth to bedrock). Accordingly, hydric soils lists are good ancillary tools to facilitate wetland determinations, but are not a substitute for onsite investigations.

Field indicators of hydric soils are morphological properties known to be associated with soils that meet the definition of a hydric soil. Presence of one or more field indicator suggests that the processes associated with hydric soil formation have taken place on the site being observed. The field indicators are essential for hydric soil identification because once formed, they persist in the soil during both wet and dry seasonal periods. However, few hydric soil indicators identify soils at a site as being currently hydric in accordance with the NTCHS hydric soils criteria described above. Field indicators of hydric soil conditions include the following:

1. **Indicators of Historical Hydric Soil Conditions**

    a. Histosols
    b. Histic epipedons;
    c. Soil colors (e.g., gleyed or low-chroma colors, soils with bright mottles (Redoximorphic features) and/or depleted soil matrix
    d. High organic content in surface of sandy soils
    e. Organic streaking in sandy soils
    f. Iron and manganese concretions
    g. Soil Listed on County Hydric Soils List

2. **Indicators of Current Hydric Soil Conditions**

    a. Aquic or peraquic moisture regime (Inundation and/or soil saturation for ≥7 continuous days)
    b. Reducing soil conditions (Inundation and/or soil saturation for ≥ 7 continuous days)
    c. Sulfidic material (e.g., rotten egg smell)

The presence of one or more of the field indicators in "1 a, b c, and/or d" above suggests that historical processes associated with hydric soil development have taken place at a given site. These indicators are useful in determining if soils at a site were historically formed under hydric soil conditions because they persist in soils during both wet and dry periods and may remain for decades and even centuries after changes in site conditions occur that inhibit subsequent wetland development, such as the elimination of wetland hydrology (NRCS 1995). However, only the presence of field indicators "2 a, b, and/or c" confirms that hydric soils occur at a site during the period of observation.

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2.3.3 Prevalence of Wetland Vegetation

The Corps' 1987 *Manual* states that the wetland vegetation conditions are met when the prevalent vegetation (i.e., more than 50 percent of vegetation cover or tree basal area) consists of macrophytes that are typically adapted to sites having wetland hydrologic and soil conditions (e.g., periodic or continuous inundation or soil saturation). Hydrophytic vegetation is defined as "plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content" (Cowardin *et al*. 1979). Hydrophytic vegetative species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Positive indicators of the presence of hydrophytic vegetation include:

1. More than 50 percent of the dominant species are rated as Obligate ("OBL"), Facultative Wet ("FACW"), or Facultative ("FAC") on lists of plant species that occur in wetlands (see Reed 1988 for California);

2. Visual observations of plant species growing in sites of prolonged inundation or soil saturation; and

3. Reports in the technical literature indicating the prevalent vegetation is commonly found in saturated soils.

Species classifications (e.g., tolerance of anaerobic soil conditions) are determined by consulting *National Lists of Plant Species that Occur in Wetlands*, which are published by FWS' National Wetlands Inventory (NWI). Regional Interagency Review Panels develop the lists by determining species' estimated probability of occurrence in wetlands vs. non-wetlands. Classifications are made by unanimous agreement of the Panel. If the Panel is unable to reach a unanimous decision on the status of a species, "no agreement" (NA) is recorded. If insufficient information exists to determine the status of a species, "no indicator" (NI) is recorded. Species that are not included in the NWI list are assigned a "not listed" (NL) designation in this report.

The resulting NWI lists include plants that grow in a range of soil conditions from permanently wet to dry. Species are divided into the following "indicator categories":

1. **"Obligate wetland" (OBL)** species, which, under natural conditions, occur almost always in wetlands (estimated probability >99 percent);

2. **"Facultative wetland" (FACW)** species, which usually occur in wetlands (estimated probability 67 – 99 percent), but are occasionally found in non-wetlands;

3. **"Facultative" (FAC)** species, which are equally likely to occur in wetlands or non-wetlands (estimated probability 34 – 66 percent);

4. **"Facultative upland" (FACU)** species, which sometimes occur in wetlands (estimated probability 1 – 33 percent), but more often occur in non-wetlands; and

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5. **"Obligate upland" (UPL)** species, which occur in wetlands in other regions, but, under natural conditions, occur almost always in non-wetlands in the region specified (estimated probability >99 percent).

Species that have an indicator status of OBL, FACW, and FAC are typically considered to be adapted for life in anaerobic soil conditions (Corps 1987) and are used as evidence of hydrophytic vegetation when they dominate plant community composition or cover. Despite widespread use of the lists for wetland delineations, it is important to note that wetland indicator species assignments are not based on the results of a statistical analysis of species occurrence. The indicator assignments are approximations of wetland affinity based on a synthesis of submitted review comments, published botanical literature, and the field experience of the members of the Interagency Review Panel. For this reason and because many plants have properties that enable them to occur in a range of microhabitats (i.e., wetlands and non-wetlands), the presence of wetland indicator species is not unequivocal evidence of the presence of wetland hydrology and hydric soils. A positive indicator or indicators of wetlands should be emphasized, such as an assemblage of plants that can only be considered "hydrophytes" when they are growing in water or partly drained hydric soils (not effectively drained hydric soils) (Corps 1987). From the FWS perspective, all species on the NWI plant lists are hydrophytes at one time or another and the wetland indicator status (OBL, FACW, FAC, or FACU) reflects the likelihood that a given individual of a species is a hydrophyte or a certain population of these plants is hydrophytic. While OBL and FACW species are the most reliable plant indicators of wetlands, FAC and FACU species also contain populations of hydrophytes (Tiner 2006).

For the reasons stated above, the 1987 Corps manual does not solely rely on the presence of hydrophytic vegetation to make wetland determinations.

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3.0 DELINEATION METHODS

The primary investigators reviewed the project area by small plane in March 2006. Field investigations were conducted on foot in March through September 2006. Existing land forms, vegetation, hydrology, and soil conditions were evaluated within the study area using topographic mapping (see Attachment 2), orthorectified digital 1999 and 2000 aerial photographs, NRCS soils mapping, and onsite observations in order to identify sites that would likely contain wetlands and other waters of the United States.

After the absence or presence of hydric vegetation, hydrology, and soil field indicators was recorded, no wetlands were identified. Specific site features (drainages) containing other potential waters of the United States were documented on color orthorectified aerial photographs at 1:6,000 scale, photographed in the upstream and downstream direction, and memorialized as point features using a hand-held, Trimble XT global positioning system (GPS) unit with sub-meter accuracy after geoprocessing or a Garmond Etrex GPS. The team measured the width and depth of the high-, the mid-, and low-flow channels at strategic points along each drainage feature. The different channel widths and depths were defined by change in substrate type, shelving, break in vegetation, debris lines, and/or scour lines. The existing active channels were located on the aerial photographs and the end points were located in the field and or on the aerial photographs. The data points were located to best characterize the typical channel geomorphology and hydrology of the drainage. Measurements focused on confined single thread sections of the channel so that the measurements could be used with Manning's Equation to estimate discharge rates.

Once field data collection was completed, GPS data were incorporated into a Geographic Information System (GIS), and overlain on a geo-referenced topographic map and a USGS Digital Orthorectified Quarter Quad dated September 2004. These overlays were used to assist in the analysis, identification and digitization of areas that would potentially qualify as waters of the United States.

The RCI and HBG field delineation team consisted of Lynn Zonge, fluvial geomorphologist; Joanne Michael, botanist; Dr. Terry Huffman, wetland scientist; Jan Novak, soil scientist; and Rachel Kozloski, soil scientist.

In order to understand the flow capacity of the low-, mid-, and high-flow channel portions of the drainages identified in the field, Manning's Equation was used to estimate the expected discharge value for the low-, the mid-, and the high-flow channel for each measured channel cross section.

Manning's Equation is: $V = (R^{2/3} \times S^{1/2} \times 1.49)/n$, where

V = velocity in feet per second
R = the hydraulic radius of the channel
S = the slope of the water surface
n = the Manning resistance coefficient

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The measured widths and depths of the low-, mid-, and high-flow channels were used to calculate the hydraulic radii. The slopes were measured from the USGS 7.5-minute quadrangle maps. A Manning's n of 0.03 was used because this value is appropriate for natural streams with gravel and cobble substrate with few boulders (Chow, 1959, Table 5-6). The resultant velocity values were multiplied by the cross-sectional area to yield the discharge values for each of the channel cross-sections.

The potential amount of water available coming into each channel from the surrounding watershed was also evaluated. Magnitude of channel flow was estimated using two methods. The Rational Method was used for the watersheds that are less than 1 square mile in size. The method provided in the USGS 1993 publication *Methods for Estimating Magnitude and Frequency of Floods in the Southwestern United States* was used for the larger watersheds. This USGS method is applicable to unregulated streams that drain basins of less than 200 square miles. These two methods are described in more detail as follows:

Rational Method:
Using the Rational Method, Q=AIC where

Q = peak rate of runoff in cubic feet per second
A = area of the contributing watershed in acres
I = rainfall intensity in inches per hour
C = the rational runoff coefficient

The watershed areas were delineated and measured on USGS 7.5-minute quadrangles (Wildcat Wash SE, SW, NW, and NE; Mule Deer Ridge SE, NE). The rainfall intensity for the 2-year, 24-hour event (0.04" per NOAA Atlas 14) was chosen as an appropriate recurrence interval that would most likely result in an ordinary high water mark. A runoff coefficient of 0.15 was used as the most appropriate value for unimproved rough terrain as provided by Dunne and Leopold (1978, Table 10-9).

USGS Method:
Using the USGS method for the 2-year event, $Q=12 \times \text{Area}^{0.58}$ where

Q = discharge in cubic feet per second
Area = the drainage area in square miles

Drainage area maps were created in GIS. The drainage areas for each data point were estimated from these maps. There were several remote drainages that were tributary to drainages measured in the field. These drainages were visible on the color aerial photographs. Widths for several of these drainages were estimated using the watershed acreage and calculating the two-year event with the USGS method and the Rational Method. The approximate widths and depths were then back calculated using Manning's Equation and comparing the values with the measured widths and depths downstream. The beginning of the defined bed and bank of the drainage channels were evident on the aerial photographs.

The Pahranagat Wash was treated differently than the smaller ephemeral channels because the watershed area of 600 square miles is too large for either the Rational or the USGS method. The channel widths were measured using the above-described USGS orthorectified aerial photographs and field checked using GPS equipment.

Daily rainfall data from the Pahranagat National Wildlife Refuge (NWR) rainfall station was obtained from the Western Regional Climatic Center. The station is located at an elevation of roughly 3,400 feet and is approximately 25 miles northwest of the Project Area. The data set analyzed covered the period of record from 1964 to 2004. The data were analyzed using a Log Pearson analysis to determine frequency intervals for various sized rainfall events. This information, combined with the results from analysis using the Manning's Equation and Rational and USGS methods, was used to validate that the observations made in the field regarding bank shelving, erosion and scour marks, and sediment and debris lines were representative indicators of OHW under normal hydrology conditions.

On the basis of the data obtained in these investigations, the geographic extent of other waters of the United States was delineated according to the criteria described in Section 2.0. The following sections discuss hydrology, soil, and vegetation conditions observed at the study site during field investigations. Sites were further classified using the U.S. Fish and Wildlife Service's *Classification System for Wetland and Deepwater Habitats* (Cowardin *et al*. 1979).

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4.0 TECHNICAL FINDINGS

This section presents the results of the wetlands delineation.

4.1 Soil Conditions

4.1.1 Soil Associations Found

The following soil units and soil associations, as described by the soil survey for the Virgin River Area, Nevada-Arizona (NRCS 1980) and the Lincoln County Soil Survey (NRCS 2000) were found within the study area:

1. Arizo very gravelly loamy sand
2. Badland
3. Colorock-Tonopah Association
4. Rock Land, St. Thomas
5. Tonopah gravelly sandy loam
6. Arizo association
7. Arizo-Bluepoint association
8. Kurstan-Knob Hill association
9. Kurstan-Tencee association
10. Tencee-Weiser association
11. Weiser-Tencee-Arizo association
12. Weiser-Tencee association

A soils map of the Project Area is provided in Attachment 3.

The Arizo very gravelly loamy sand, 2 to 8 percent slopes, is a deep, excessively drained soil on alluvial fans. It forms in mixed very gravelly and sandy alluvium. Elevation ranges from 1,400 to 4,000 feet. The surface layer, typically 8 inches thick, is typically light brownish gray very gravelly loamy sand, underlain to 60-inch depth by light brownish gray, very stratified, very gravelly sand, and very cobbly coarse sand. Permeability is very rapid and available water capacity is low. Runoff is very slow and the hazard of water erosion is slight.

The Badland soil unit, 15 to 50 percent slopes (occasionally up to 100 percent), consists of severely eroded and gullied land. It is mainly on old terrace escarpments and along the walls of the canyons of the Virgin River. It is made of exposures of the Muddy Creek Formation. The Formation consists of highly stratified sand, silt, and clay that contain a large amount of gypsum and calcium carbonate. Runoff is very rapid and the hazard of erosion is very high.

The Colorock-Tonopah Association consists of Colorock very gravelly loam, 2 to 8 percent slopes and Tonopah very gravelly sandy loam, 2 to 8 percent slopes. The Colorock soil is on alluvial fans formed from mixed rock sources and the Tonopah soil is on alluvial fans and terraces. The Colorock soil is shallow and well drained. The surface layer is pink very gravelly loam about 3 inches thick and the subsoil is pink very gravelly sandy loam about 12 inches thick over an indurated, lime-cemented hardpan about 22 inches thick. Underlying the pan to a depth

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of 60 inches is light gray very gravelly sandy loam. Depth to the hardpan ranges form 12 to 20 inches. Permeability is moderately rapid above the hardpan and very slow through the hardpan. Runoff is medium and the hazard of water erosion is slight. The Tonopah soil is deep and excessively drained. It formed in alluvium derived dominantly from mixed rock sources. Typically, the surface layer is light gray very gravelly sandy loam about 6 inches thick. The underlying material to a depth of 60 inches or more is light brown very gravelly sand. Permeability of the Tonopah soil is very rapid. Runoff is very slow and the hazard of water erosion is slight.

The Rock land-St. Thomas association, very steep, 15 to 50 percent slopes, is on foothills and mountainsides. Rock land consists of areas that have exposures of limestone bedrock. In some areas soil material covers the bedrock. The St. Thomas soil is shallow and well drained, forming from limestone residuum. The 2-inch-thick surface layer is very pale brown cobbly loam, underlain by 12 inches of very pale brown very cobbly loam. Unweathered bedrock is at a depth of 12 inches. Permeability of the St. Thomas soil is moderately rapid. Runoff is medium and the hazard of water erosion is moderate.

The Tonopah gravelly sandy loam, with 0 to 4 percent slopes, is a deep, excessively drained soil found on alluvial fans and terraces at elevations between 1500 and 3000 feet. It formed in sandy alluvium derived from mixed rock sources. The upper 6-inch surface layer is light brown, gravelly sandy loam, underlain by light brown, very gravelly sand to a depth of 60 inches. Permeability is rapid, runoff is slow, and the hazard of water erosion is slight.

The Arizo association is comprised of Arizo very cobbly loamy sand, 2 to 4 percent slopes and Arizo very gravelly loamy sand, 2 to 4 percent slopes. The first Arizo series forms on channels at an elevation of 2,500 to 3,800 feet. The surface layer is very cobbly loamy sand, with 30 percent cobbles and 25 percent gravels. Soils are excessively drained and formed from alluvium derived from mixed rocks. The second Arizo series forms on stream terraces from 2,500 to 3,800 feet in elevation. The surface layer is very gravelly loamy sand, with 3 percent cobbles and 45 percent gravel. Soils are also excessively drained and formed from alluvium derived from mixed rocks.

The Arizo-Blueprint association consists of Arizo very gravelly loamy sand, 0 to 4 percent slopes; Arizo very cobbly loamy sand, 0 to 4 percent slopes; and Bluepoint loamy fine sand, 4 to 8 percent slopes. The first Arizo series is on stream terraces, is excessively drained and has a surface layer of very gravelly loamy sand. The surface layer of the second Arizo series is very cobbly loamy sand, is excessively drained, and is on channels. Both series generally occur from 2,500 to 3,800 feet. The Bluepoint series formed in alluvium derived from mixed rocks and the soil is found on dunes. This series consists of very deep, somewhat excessively drained soils, with the upper 3 inches composed of loamy fine sand, pale brown in color. From 3 to 42 inches deep, the stratified loamy fine sand is pale brown and becomes very pale brown, stratified loamy fine sand to a depth of 60 inches.

The Kurstan-Knob Hill association includes Kurstan gravelly sandy loam, 2 to 8 percent slopes and Knob Hill loamy sand, 2 to 4 percent slopes. The Kurstan series occurs at 2,600 to 3,000 feet in elevation on fan remnants and has a gravelly sandy loam surface layer, with well-drained

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soils. The Knob Hill series occurs at 2,500 to 3,000 feet in elevation on inset fans and consists of very deep, somewhat excessively drained soils that formed in alluvium from mixed rocks. The upper 2 inches is pale brown, loamy sand, underlain by pale brown, gravelly loamy sand to 22 inches. Below this layer is white stratified loamy sand to 52 inches and becomes light gray stratified very gravelly loamy sand to 60 inches deep.

Major components of the Kurstan-Tencee association are the Kurstan gravelly sandy loam, 8 to 15 percent slopes and Tencee very gravelly sandy loam, 8 to 15 percent slopes, and alluvium derived from mixed rocks. The Kurstan series consists of very deep well drained soils that formed in alluvium from mixed rocks. It occurs on fan remnants at 2,600 to 2,800 feet in elevation (NRCS 2000). The upper 2 inches is pale brown gravelly sandy loam, underlain with very pale brown, gravelly sandy loam to a depth of 60 inches. The Tencee series forms on fan remnants, but occurs on the upper portion of the slope at 2,600 to 2,800 feet in elevation. The surface layer is very gravelly sandy loam and is well drained.

The Tencee-Weiser association, 2 to 8 percent slopes, is shallow over petrocalcic well drained soils that formed in alluvium from mixed rock. These soils are found on fan remnants in the upper northeastern slopes of the project area. The upper horizon, 0 to 3 inches, is light brownish grey very cobbly sandy loam with this platy structure. This horizon is followed by a pink, very gravelly sandy loam, with thick lime coats on the undersides of rock fragments, underlain by a white indurated petrocalcic horizon. Runoff from these soils is very rapid, however the hazard of water erosion is slight.

The Weiser-Tencee-Arizo association, 2 to 4 percent slopes, is a deep, excessively drained soil that can be found on the upper slopes west of the Pahranagat wash. These soils are derived from limestone, dolomite, and mixed rocks and range in elevation from 2,500 to 3,800 feet. The surface is commonly covered over five percent with cobbles and over fifty percent with pebbles. The soil profile of this association is characterized by a 0 to 6 inch surface horizon composed of a cobbly or sandy loam soil, usually followed by an extremely gravelly, sandy loam with pockets of lime and frequent lime coated rock fragments. In filtration on these soils is slow and the hazard of water erosion is slight.

The Weiser-Tencee association, 2 to 8 percent slopes, is a moderately deep soil complex formed in alluvium from limestone, dolomite, and mixed rocks. This soil complex is found on fan remnants in the upper slopes of the northeastern portion of the property and ranges in elevation from 2,500 to 3,800 feet. The upper horizon, typically 5 inches thick, is pale brownish gray very gravelly sandy loam, underlain by a massive, strongly alkaline, extremely gravelly, sandy loam with a strong lime component. This second horizon, which ranges from 7 to 12 inches in depth, is frequently followed by an indurated petrocalcic horizon. Water infiltration on these soils is slow and the hazard of erosion is slight.

4.1.2 Presence of Hydric Soils

None of the above described soil units or associations listed on the national hydric soils list (USDA/NRCS, 1995) or on the Lincoln county hydric soils list for the Virgin River Area (USDA/NRCS, 1980). Sidecuts along the banks of the drainages were used to examine the soils

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for hydric soil characteristics. These sidecuts provided excellent soil profiles. No hydric soil features were found. Table 2 summarizes the hydrologic characteristics of the soils found within the study area. Table 3 summarizes the hydric soil indicators evaluated as to presence or absence during field investigations.

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Table 2. Hydrologic Characteristics of Soil Types Found During Onsite Investigations and Review of NRCS Soils Survey Data
[1]From 1980 NRCS *Soil Survey of the Virgin River Area, Nevada-Arizona.*

Soil Series Name	Map Unit Symbol	Landform	Slope	Groundwater (depth to surface)	Flooding	Duration	Drainage Class	Permeability	Runoff
Arizo very gravelly loamy sand	AXC	Alluvial fans	2-8 %	>6’	Common	Very Brief	Excessively drained	Rapid	Very Slow
Badland	BD	Old terrace escarpments	15-50 %	>6’	None	--	Very poorly drained	Slow	Very rapid
Colorock-Tonopah association, moderately sloping	CTC	Alluvial fans and terraces	2-8 %	> 6’	Rare	--	Well drained	Moderately rapid	Medium
Rockland-St. Thomas association, very steep	RTF	Foothills and mountainsides	15-50 %	> 6’	None	--	Well drained	Moderately rapid	Medium
Tonopah gravelly sandy loam	THB	Alluvial fans and terraces	0-4%	> 6’	Rare	--	Excessively drained	Rapid	Slight
Arizo Association	1031	Drainageways and stream terraces	2-4%	> 6’	Occasional / Rare	--	Excessively drained	Rapid	Very slow
Arizo-Bluepoint Association	1030	Drainageways, stream terraces and dunes	0-15%	>6’	Occasional / Rare	--	Excessively drained	Rapid	Very slow
Kurstan-Knob Hill Association	1021	Inset fans and fan remnants	2-15%	>6’	None	--	Well drained	Moderate	Moderate
Kurstan-Tencee Association	1020	Fan remnants	2-30%	>6’	None	--	Well drained	Slow	Somewhat rapid
Tencee-Weiser Association	1010	Fan remnants	2-30%	>6’	None	--	Well drained	Slow	Somewhat rapid
Weiser-Tencee Association	1001	Fan remnants	2-30%	>6’	None	--	Well drained	Slow	Somewhat rapid
Weiser-Tencee-Arizo Assoc.	1000	Fan remnants, drainageways, and stream terraces	0-30%	>6’	None / Occasional	--	Well drained	Moderate	Moderate

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Table 3. Hydric Soil Indicators Evaluated As to Presence or Absence During On-site Investigations

NRCS Soil Series			Indicator Observed		
Soil Series Name	**Map Unit Symbol**	**Landform**	**Aquic Moisture Regine**	**Gleyed or Low-Chroma Colors**	**Redoximorphic Features (mottles)**
Arizo Assoc.	1031	Drainageways and stream terraces	No	No	No
Arizo-Bluepoint Assoc.	1030	Drainageways, stream terraces and dunes	No	No	No
Azizo very gravelly loamy sand	AXC	Alluvial fans	No	No	No
Badland	BD	Old terrace escarpments	No	No	No
Colorock-Tonapah association, moderately sloping	CTC	Alluvial fans and terraces	No	No	No
Kurstan-Knob Hill Assoc.	1021	Inset fans and fan remnants	No	No	No
Kurstan-Tencee Assoc.	1020	Fan remnants	No	No	No
Rockland-St. Thomas association, very steep	RTF	Foothills and mountainsides	No	No	No
Tencee-Weiser Assoc.	1010	Fan remnants	No	No	No
Tonopah very gravelly sandy loam	THB	Alluvial fans and terraces	No	No	No
Weiser-Tencee Assoc.	1001	Fan remnants	No	No	No
Weiser-Tencee-Arizo Assoc.	1000	Fan remnants, drainageways, and stream terraces	No	No	No

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4.2 Hydrology Conditions

4.2.1 Site Hydrology Conditions

The project area lies within the Pahranagat Wash watershed. The immediate watershed is bound on the west by the Sheep Range and on the east side by the Meadow Valley Mountains. Water from the Sheep Range is conveyed onto the project area via culverts ranging in size from 24 inches to 7 feet in diameter under U.S. Highway 93.

A large ditch parallels the majority of US Highway 93 on the upgradient side (west side of the road). Water from the coalescing alluvial fans flows into the ditch, and along the ditch either to the north or the south (depending on location) until a breach in the ditch is encountered. The breaches in the ditch coincide with culverts under US Highway 93. In this way, the culverts control the hydrology of the ephemeral channels entering the project area.

4.2.2 Hydrology Indicators Found

All of the measured channels had several indicators of channel flow. The channels generally had high-, medium-, and low-flow channels. Each type of channel had observable flow lines as indicated by scour lines, shelving, manmade debris, thin tissue vegetation debris (grass and forb leaves), woody debris, uprooted grass material lodged in shrubs or sand, silt and clay deposits.

Some of the drainages west of the Pahranagat Wash experienced a large localized rainfall event on August 15, 2005 during which time several culverts along Highway 93 became plugged with debris and water flowed over the highway, temporarily closing the road due to washed out portions of the road. In general, the drainages crossing Highway 93 do not flow every year. Rather, the drainages flow periodically during large localized regional rain events typically occurring during the winter months (January through March) or during localized summer thunderstorms (July and August) (NOAA, 2005; pers. comm. Nick McMurry, NCOT, 8-29-06; quarterly observations 2001 through 2005, Lynn Zonge).

The low- and medium flow drainage channels on the west side of the project area (west of Highway 93) were found to be dominated by field indicators of the above described August 15, 2005 above-normal event. Interestingly, the majority of the channels to the east of the Pahranagat Wash had weak indicators of relatively low recent flow and many had no indication of recent flow at all. This finding is believed to be the result of where the majority of the rain fell in relationship to the drainages location. Drainages located between US Highway 93 and west of the Pahranagat Wash had evidence of low flows. This is believed to be the result of the construction by the Nevada Department of Transportation of detention basins that parallel the western border of US Highway 93. Without these detention basins it is believed that the drainages would have experienced higher flows similar to the drainages west of Highway 93.

Rain events of slightly more than one inch over roughly one hour were experienced over the project site in August 2006. The amount of rainfall was determined to be a 25-year event. The resulting field indicators (plant detritus, thin tissue plant parts and fine grained sediment) provided documentation as to the geographic extent of flow within the desert dry wash drainage channels within the project site during an above normal event.

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The Pahranagat Wash was reviewed to determine if the main channel locations had changed since the 1999 and 2000 aerial photographs were taken. The channels appear to be in the same locations and in places have more vegetation in and along them than indicated on the aerial photographs. There was overlying fine sediment deposited along the flow areas within the Pahranagat Wash (of what appeared to be of recent origin), which could be traced to flows originating from Kane Springs Wash to the north and not from the Pahranagat Wash area west of US Highway 93.

Analysis of daily rainfall data for the period from 1964 to 2004 shows that the majority of rainfall events have been less than ¾ inch over the period of record as well as the last 5- to 10-year periods (see Attachment 4). Given the short-lived (1 – 3 years) presence of thin tissue vegetation debris described above, it appears that flows that occurred within the low and mid channels of the drainage channels evaluated are the result of rainfall events having frequency intervals of less than 10 years.

The results of the Manning's Equation for each channel and the hydraulic modeling using the Rational Method and the USGS method are provided in Attachment 6. A review of the Manning's calculations reveals that the calculated discharge values using the Rational Method and the USGS method (with 2-year recurrence intervals) generally coincide with the high or medium flow channels. This result contradicts direct on-site field observations during and following storm events of one inch where there was either no flow or extremely little flow in the low flow channel.

There are many complicating factors among estimated and actual precipitation and discharge values. The closest precipitation gauges are located in Moapa and Alamo. Each of these locations are roughly 20 miles away and geographically much different than the Coyote Spring Valley area. Further, flash floods of the magnitude that has shaped the existing alluvial channels, in Coyote Spring Valley are caused by summer thunderstorms. These types of storms are extremely localized and can cause substantial flooding in one watershed while an adjacent watershed receives no water at all. Precipitation values provided by the NOAA Atlas for Coyote Spring Valley are extrapolated based existing precipitation gauges and cover a 24-hour period whereas in arid environments, local rain bursts that cover 15-minute intervals play a large role in flash flooding (Ken Adams, Desert Research Institute, personal comm. 8-31-06).

Models to predict discharge values are limited in that they have not been tested in the southern Nevada region for low frequency or "normal events" on alluvial fan drainages. Existing empirical equations assume various temporal distributions of the design storm, in this case the two-year, 24-hour precipitation event, which greatly affects estimated peak runoff calculations. When a leading or advanced type of design storm distribution is used, the largest rainfall intensities occur at the time when rainfall losses are large and the runoff is reduced. If, however, a lagging storm pattern is used, the reverse is true and runoff is increased (Urbonas, 1979). Likewise, models assume constant precipitation rates when in reality storms in the arid southwest have variable precipitation rates, which tend to result in higher infiltration and lower runoff rates (Stone and Paige, 2003).

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Bull (1991) stresses that the shape of a drainage basin significantly affects the shape of an alluvial fan and the fan discharge, including sediment and water. In addition, fans composed of coarse-grained deposits may develop lobate masses called sieve deposits. These are similar to debris-flow deposits but lack the fine-grained material and thus are highly permeable. Even large discharges may infiltrate before crossing the entire fan if there are sieve deposits (Hooke, 1967).

The general nature of the physical indicators of hydrologic flow observed is provided in Table 4. Corps indicators of inundation and soil saturation are listed in Table 5.

Table 4. Nature of Drainage Flow Indicators

Channel Type	Types of Indicators	Observations
Low	scour lines	Present, usually near the upper edge of the bank
	shelving	Present, usually near the upper edge of the bank
	manmade debris	Not Present
	thin tissue vegetation debris	Present, usually with majority of debris near the upper edge of the bank
	detritus (disintegrated plant parts)	Present, usually with majority of debris near the upper edge of the bank
	sand, silt and clay deposits	Present, usually with majority of deposits near upper edge of the bank
Mid	scour lines	Present, usually midway on the edge of the bank
	shelving	Present, usually midway on the edge of the bank
	man-made debris	Present, usually midway on the edge of the bank
	thin tissue vegetation debris	Present, usually midway on the edge of the bank
	detritus (disintegrated plant parts)	Present, usually with majority of debris near the upper edge of the bank
	sand, silt and clay deposits	Present, usually midway on the edge of the bank
High	Weathered rock	Present
	scour lines	Present
	shelving	Present
	man-made debris	Present
	thin tissue vegetation debris	Not Present
	sand, silt and clay deposits	Not Present

Table 5. Hydrology Indicators Found During Onsite Investigations

NRCS Soil Series			Indicator Observed							
Soil Series Name	**Map Unit Symbol**	**Landform**	**Inundated / Ponded**	**Saturated in Upper 12 inches [1]**	**Water Marks**	**Drift Lines**	**Sediment Deposits**	**Oxidized Rhizospheres – Old Roots**	**Young Roots**	**Water Stained leaves**
Arizo Assoc.	1031	Drainageways and stream terraces	No	No	Yes	Yes	Yes	No	No	No
Arizo-Bluepoint Assoc.	1030	Drainageways, stream terraces and dunes	No	No	Yes	Yes	Yes	No	No	No
Arizo very gravelly loamy sand	AXC	Alluvial fans	No	No	Yes	Yes	Yes	No	No	No
Badland	BD	Old terrace escarpments	No	No	Yes	Yes	Yes	No	No	No
Colorock-Tonopah Assoc., moderately sloping	CTC	Alluvial fans and terraces	No	No	Yes	Yes	Yes	No	No	No
Kurstan-Knob Hill Assoc.	1021	Inset fans and fan remnants	No	No	Yes	Yes	Yes	No	No	No
Kurstan-Tencee Assoc.	1020	Fan remnants	No	No	Yes	Yes	Yes	No	No	No
Rockland-St. Thomas Assoc., very steep	RTF	Foothills and mountainsides	No	No	Yes	Yes	Yes	No	No	No
Tencee-Weiser Assoc.	1010	Fan remnants	No	No	Yes	Yes	Yes	No	No	No
Tonopah gravelly sandy loam	THB	Alluvial fans and terraces	No	No	Yes	Yes	Yes	No	No	No
Weiser-Tencee Assoc.	1001	Fan remnants	No	No	Yes	Yes	Yes	No	No	No
Weiser-Tencee-Arizo Assoc.	1000	Fan remnants, drainageways, and stream terraces	No	No	Yes	Yes	Yes	No	No	No

[1] Sufficient to meet criteria defined in Corps 1987 *Wetlands Delineation Manual* and subsequent official guidance (i.e. continuous for 7 days or greater).

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4.3 Vegetation Conditions

4.3.1 Vegetation Types

The site is characteristic of the Mojave Desert environment, dominated by creosote-bursage scrub community, including Mojave yucca and several species of cacti. Attachment 5 provides a list of plant species found present within the study area. Plants are listed in Attachment 5 together with their NWI indicator status. The creosote-bursage community is found uniformly throughout the alluvial fan. The badlands which are located along the eastern portion of the project area support similar vegetation at lower densities.

The alluvial fan and badlands are bisected with numerous dry washes and arroyos. Along the western portion of the project area, washes were typically devoid of vegetation, although occasional patches of grass were observed. Mojave yucca were also frequently observed along the edges of the wash. At the eastern edge of the project area, where the washes enter the Pahranagat wash, vegetation densities increased. Big galleta grass (*Hillaria rigida*) increased in density along the upper edges of the washes, often forming large patches as the wash entered the Pahranagat. The sandy washes found within the Pahranagat Wash supported catclaw acacia (*Acacia greggii*) and desert willow (*Chilopsis* sp.).

Vegetation within the Coyote Springs area of study is characteristic of the Mojave Desert environment. The dominant plant community identified within the alluvial fans of the Project Area is Creosote-Bursage scrub. This vegetation type is dominated by creosote (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Mojave yucca (*Yucca schidigera*) and several species of cacti are also prevalent. Common shrubs species identified within this community included Mormon tea (*Ephedra* sp.), indigo bush (*Psorothamnus fremontii*), four-winged salt bush (*Atriplex canescens*), hopsage (*Grayia spinosa*), range ratany (*Krameria erecta*), brittle bush (*Encelia farinosa*), and purple sage (*Salvia dorii*). Blackbrush (*Coleogyne ramosissima*) dominated stands were observed along the northern extant of the project area. Other associated species included Mojave yucca (*Yucca schidigera*), cholla (*Opuntia* sp.), and beavertail pricklypear (*Opuntia basilaris*). Associated grass species include Indian ricegrass (*Oryzopsis hymenoides*), bush muhly (*Muhlenbergia porteri*), and big galleta (*Pleuraphis rigida*).

Also found in this classification are desert washes that support catclaw (*Acacia greggii*), and desert willow (*Chilopsis* sp.).

4.3.2 Prevalent Wetland Vegetation

Of the plants found on site and listed in Attachment 5, only desert willow is a field indicator of potential wetland vegetation conditions. The plant was not found to be a prevalent species (>50 percent) within the vegetation strata identified within the various drainages observed.

5.0 AREAS REGULATED BY THE CORPS

On the basis of the methods and criteria for delineating wetlands and other waters of the U.S., as defined in the Corps' 1987 *Manual*, and Corps guidance documents and regulations, the HBG-RCI team found no locations within the study area that collectively had present indicators of hydric soil, a prevalence of wetland vegetation, and wetland hydrology; therefore, no wetlands were found. However, potential other waters of the United States were found.

Other waters of the United States were delineated based on:

1. Determining the presence of an ordinary high water mark (OHWM) as defined by field indicators, including observable flow lines as indicated by scour lines, shelving, manmade debris, vegetation debris, and sand, silt and clay deposits, and then

2. Using the Rational Method or the USGS method to compare channel widths for a 2-year event.

The low channel widths were selected as the most representative of flow during normal rainfall conditions, which are believed to occur, on average, every year or every two years. Daily rainfall within this frequency range is typically below 1 inch (Attachment 4). It is believed, based on field indicators and rainfall data, that flows from less frequent rainfall events of a greater magnitude than 1 inch of daily rainfall are not representative of normal hydrology conditions.

On the basis of this information, the widths of the channels were multiplied by the channel length to obtain the total estimated jurisdictional area for other waters of the United States (see Attachment 8). The locations of the channels are shown in Attachment 7 and described as to habitat type in Attachment 9.

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6.0 WETLANDS AND OTHER WATERS AREAS EXEMPT OR EXCLUDED FROM CORPS JURISDICTION

A number of discretionary exemptions from Clean Water Act regulations exist for areas that would otherwise qualify as waters of the United States. These are described below together with rationale for the exemption of a manmade drainage ditch.

6.1 Discretionary Exemptions

As described in the preamble discussion of the Corps regulations in the November 13, 1986, *Federal Register*, certain areas that meet the technical definition of wetlands generally are not considered waters of the U.S. (33 CFR 328.3(a)). Such areas include:

(a) Non-tidal drainage and irrigation ditches excavated on dryland;

(b) Artificially irrigated areas which would revert to upland if the irrigation ceased;

(c) Artificial lakes or ponds created by excavating and/or diking dryland to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

(d) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dryland to retain water for primarily aesthetic reasons; and

(e) Water-filled depressions created in dryland incidental to construction activity and pits excavated in dryland for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States.

6.2 Exclusion under SWANCC

Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 99-1178 (January 9, 2001) ("SWANCC") involved statutory and constitutional challenges to the assertion of CWA jurisdiction over isolated, non-navigable, intrastate waters used as habitat by migratory birds. SWANCC held that there is no CWA jurisdiction over "isolated, non-navigable, intrastate waters" where there is no interstate or foreign commerce nexus.

6.3 Exclusion under Rapanos/Carabell

Recently, the U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA) issued guidance pursuant to the Supreme Court decisions in *Rapanos v. United States* and *Carabell v. United States*. The guidance includes requirements for additional documentation, particularly with regard to whether or not there is a "significant nexus" to a traditionally-navigable water (TNW). The types of information that the Corps will be seeking to document are found within an 8-page "Approved Jurisdictional Determination Form" that has been adopted by the Corps as part of the Rapanos-Carabell national guidance (See Attachment 10).

For water bodies that are traditionally navigable (and their adjacent wetlands), and for tributaries that are "relatively permanent" (RPW's: streams that are not perennial but that flow for 3 months or more annually, and their adjacent wetlands), the Corps and EPA will assert jurisdiction under the Clean Water Act, without the need for any exhaustive documentation of "significant nexus." There is no dispute that Clean Water Act jurisdiction encompasses traditionally-navigable waters and their perennial and relatively-permanent tributaries. Activities that result in discharges of pollutants into these waters can adversely affect the physical, chemical, and biological integrity of navigable waters.

For tributaries that do not flow more 3 months or more annually, and if there adjacent wetlands associated with these non-relatively permanent waters (non-RPW's), jurisdiction may be asserted under the Clean Water Act if there is a "significant nexus." A significant nexus analysis, using the Corps' approved jurisdictional determination form, "will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW." These factors include a) the capacity to carry pollutants or flood water into a TNW, b) providing habitat for species that are present in the downstream TNW, c) the capacity of transferring nutrients and organic carbon to a TNW, or d) other "relationships to the physical, chemical, or biological integrity of the TNW. The jurisdictional determination form does not specify any numerical criteria that establish a threshold for what would constitute a significant nexus, or fail to meet the standard of significance.

Based on review of Attachment 10 an analysis of the potential factors that the Corps may use to determine whether Clean Water Act jurisdiction exists was made. The results are summarized as follows.

1. None of the drainages shown in Attachment 7 are a traditionally-navigable waters (TNW).
2. The drainages shown in Attachment 7 support flows which ultimately connect to a TNW.
3. The drainages shown in Attachment 7 have an identifiable bed and banks (1 to 3 depending on location) and ordinary high water marks (OHWM).
4. There are no wetlands adjacent to the drainages shown in Attachment 7.
5. There are no wetlands within the area of study.
6. None of the drainages shown in Attachment 7 flow for 3 months or more each year.
7. The low-flow portion of the drainages (see discussion below) typically only flow a few days during the year.

Given that the drainages flow only for a few days each year the Corps/EPA guidance discussed above Clean Water Act jurisdiction will extend to the drainages within the area evaluated only if the Corps determines that these drainages exceed the threshold for jurisdictional assertion pursuant to a significant nexus determination. As stated in item "C" of the Corps JD Form (Attachment 10), "*A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus*."

Field studies found that all the drainages delineated in Attachment 7 had both a low and mid channels or a combination of low, mid and high flow channels with each channel type having an identifiable bed and banks and OHWM. These channels represent the impacts of various frequencies of flows that have occurred on the site. Site observations made in 2005, 2006 and at the time of the January 2007 Corps/EPA field inspection, high flow channel beds up to the OHWM contained weathered rock and upland vegetation showing no signs of flood damage with flow debris such as glass and metal that appeared to be decades old. Mid-flow channel beds up to the OHWM contained unweathered rock, sediment deposits typically ranging from coarse grain to cobble size, woody flow debris and upland vegetation showing signs of flood damage with flow debris that appeared to have been recently deposited within the year. Low-flow channel beds up to the OHWM contained unweathered rock with no vegetation with flow debris of recent origin consisting of fine grained sediments and leaf detritus.

The indicators within the mid-flow channels described above were according to the nearest rain gauge (CSI nursery) the project area received two 25-year rainfall events prior to the Corps/EPA review of the project area:

- July 28, 2006 (1.24" in 2 hours)
- Sept 7, 2006 (0.92" in 1 hour)

The actual rainfall over the impacted drainages during these types of monsoon storms is extremely variable both spatially and temporally. As an example of the monsoon variability, a convective storm on August 14, 2005 closed Hwy 93 due to floodwaters and rocks over the highway. The CSI nursery gauge registered 0.74" for the day, which is less than a 2-year event for 24 hours but would be between a 5- and 10-year event if it occurred within one hour.

The timing, intensity, and duration of convective rainfall in general and of the topography-rainfall relationship in particular is poorly understood for this area of Southern Nevada (Gochis, et al, 2003). There are no surface observation networks with adequate temporal and spatial

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resolution in the region that could be used to model the monsoon storm events. These types of monsoon rainfall events have the potential to result in relatively large flow events with velocities and tractive forces capable of moving rock and debris. The resulting form of the channel bed and bank remain until the next large event. Conversely, during ordinary periodic events, those occurring every year or every 2 to 3 years, flows are well within the low flow channel bed and bank created during the larger events as the flows cannot generate the tractive forces to mobilize the larger clasts moved during the larger flow events. Such events, with frequency being determined using nearby CSI weather station data, were also observed at the site during 2006. Field indicators found after these events included readily identifiable fine grained sediment and organic detritus deposits that were confined to the bed of low flow channels up to the OHWM.

Our next step in the significant nexus analysis for determining the presence or absence of a potentially regulated water evaluated each individual drainage channel within the study area in accordance with the Corps/EPA Guidelines which require consideration of the:

1. flow characteristics and functions of the tributary itself, and
2. functions performed significantly affect the chemical, physical, and biological integrity of a TNW.

Tributaries or portions, thereof where multiple beds and banks and OHWMs occurred were found to meet the test on a per low-, mid- and high-flow channel basis if it could be determined that the drainage had more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW

This part of the analysis first used the Corps' descriptive approach (CDA) to generally identify the presence or absence of wetland functions within each drainage found to have one or more identifiable bed and banks and an OHWM or OHWMs, irrespective of the flow characteristics of the low, mid and high flow channels found to be present. The CDA was selected for this because it examines many of the aquatic habitat functions outlined in Corps regulations. These functions are generally accepted by the scientific and regulatory communities, and form the basis on which aquatic habitats are regulated in many state and local jurisdictions including Nevada. The table below shows the findings of this first step. The table indicates that several functions were identified as being performed within the drainages show by Attachment 7.

Function [1]	Description	Function Present?
Groundwater Recharge/Discharge	Habitat serves as a groundwater recharge and/or discharge area. Recharge relates to the potential for the habitat to contribute water to an aquifer. Discharge relates to the potential for the habitat to serve as an area where groundwater can be discharged to the surface.	Present

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Function [1]	Description	Function Present?
Floodflow Alteration (Storage & Desynchronization)	Habitat aids in the reduction of flood damage by attenuating floodwaters for prolonged periods following precipitation events.	Present
Fish and Shellfish Habitat	WOUS provides seasonal or permanent habitat for fish and/or shellfish.	Not Present
Sediment/Toxicant/ Pathogen Retention	Habitat aids in the prevention of the degradation of water quality by trapping sediments, toxicants or pathogens.	Present
Nutrient Removal/Retention/ Transformation	Habitat aids in the prevention of adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.	Present
Production Export (Nutrient)	Habitat produces food or usable products for human or other living organisms.	Present
Sediment/Shoreline Stabilization	Habitat aids in the stabilization of stream banks and shorelines against erosion.	Present
Wildlife Habitat	WOUS provides habitat for various types and populations of animals. Both resident and/or migrating species are considered.	Present

[1] Adapted from: U.S. Army Corps of Engineers, New England Division. 1995. *The Highway Methodology Workbook, Supplement - Wetland Functions and Values: A Descriptive Approach.* November. 32 pp.

The second step was to determine if any or all of the functions performed within low, mid or high flow channels with an OHWM associated with the drainages shown in Attachment 7 significantly affect the chemical, physical, and biological integrity of a TNW. Attachments 11, 12, and 13 provide tables which summarize this analysis for the Pahranagat Wash, eastern tributaries to the Pahranagat Wash and western tributaries to the Pahranagat Wash. A number channels within the drainages shown by Attachment 7 were found to provide functions that have a "*more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW.*" Given the frequency, amount of flows received and channel morphology only the low flow channels in the northern, northeastern, eastern and western tributary drainages to the Paharanagat Wash were found to perform in a readily identifiable manner one or more of the functions described in the above table at more than speculative or insubstantial manner. In contrast both the low and mid channels of the Paharanagat Wash were found to meet this threshold.

6.4 Site Evaluation and Findings

Aquatic resources on the Coyote Springs Property site were examined with respect to the above discretionary exemptions and SWANNC exclusion from Clean Water Act regulation. No areas were found that could either potentially be exempted or excluded from regulation.

With respect to the *Rapanos v. United States* and *Carabell v. United States* significant nexus test a number channels within the drainages shown by Attachment 7 were found to provide functions that have a "*more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW*" (see Attachments 11, 12 and 13). Given the frequency, amount of flows received and channel morphology only the low flow channels in the northern, northeastern, eastern and western tributary drainages to the Paharanagat Wash were found to perform in a readily identifiable manner one or more of the functions described in the above table at more than speculative or insubstantial manner. In contrast both the low and mid channels of the Paharanagat Wash were found to meet this threshold. These channels would, therefore be considered WOUS while channels found to have a *a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW* were determined to be potentially excluded from Corps regulatory jurisdiction.

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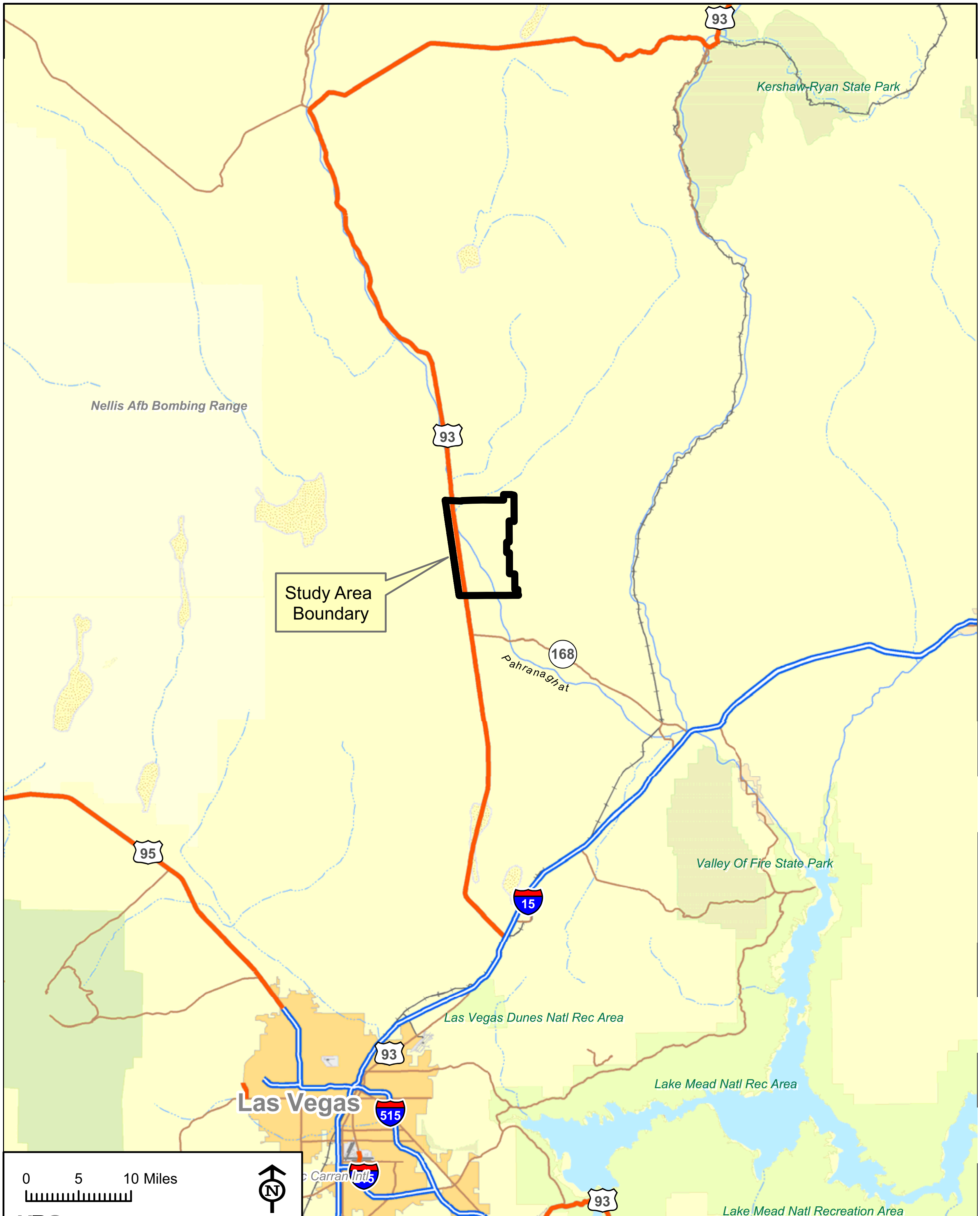
Attachment 1

Coyote Springs Area of Study Location Map



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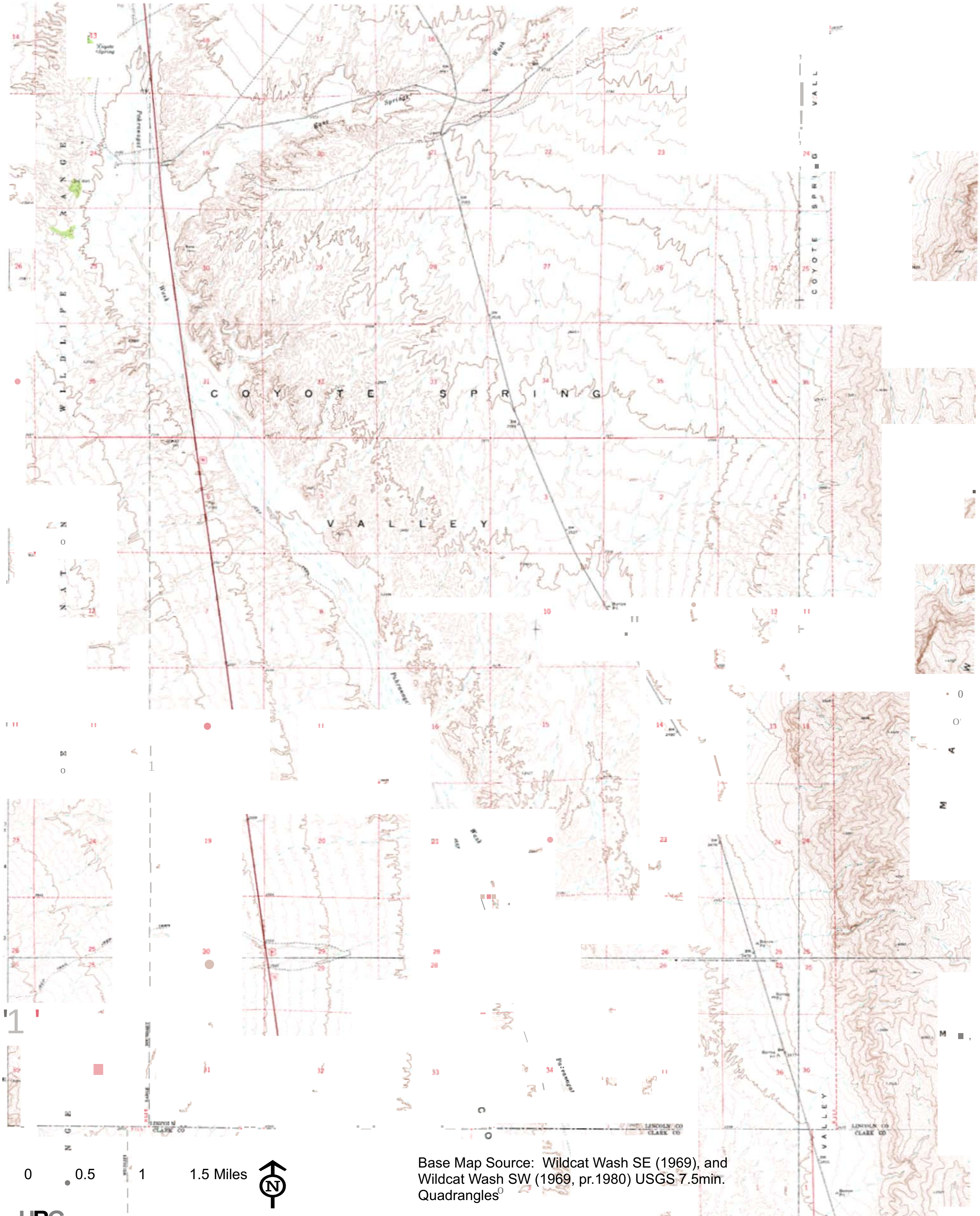
Attachment 1. Location of Study, Coyote Springs, Lincoln County, Nevada

Attachment 2

USGS Topographic Map Showing Coyote Springs Area of Study



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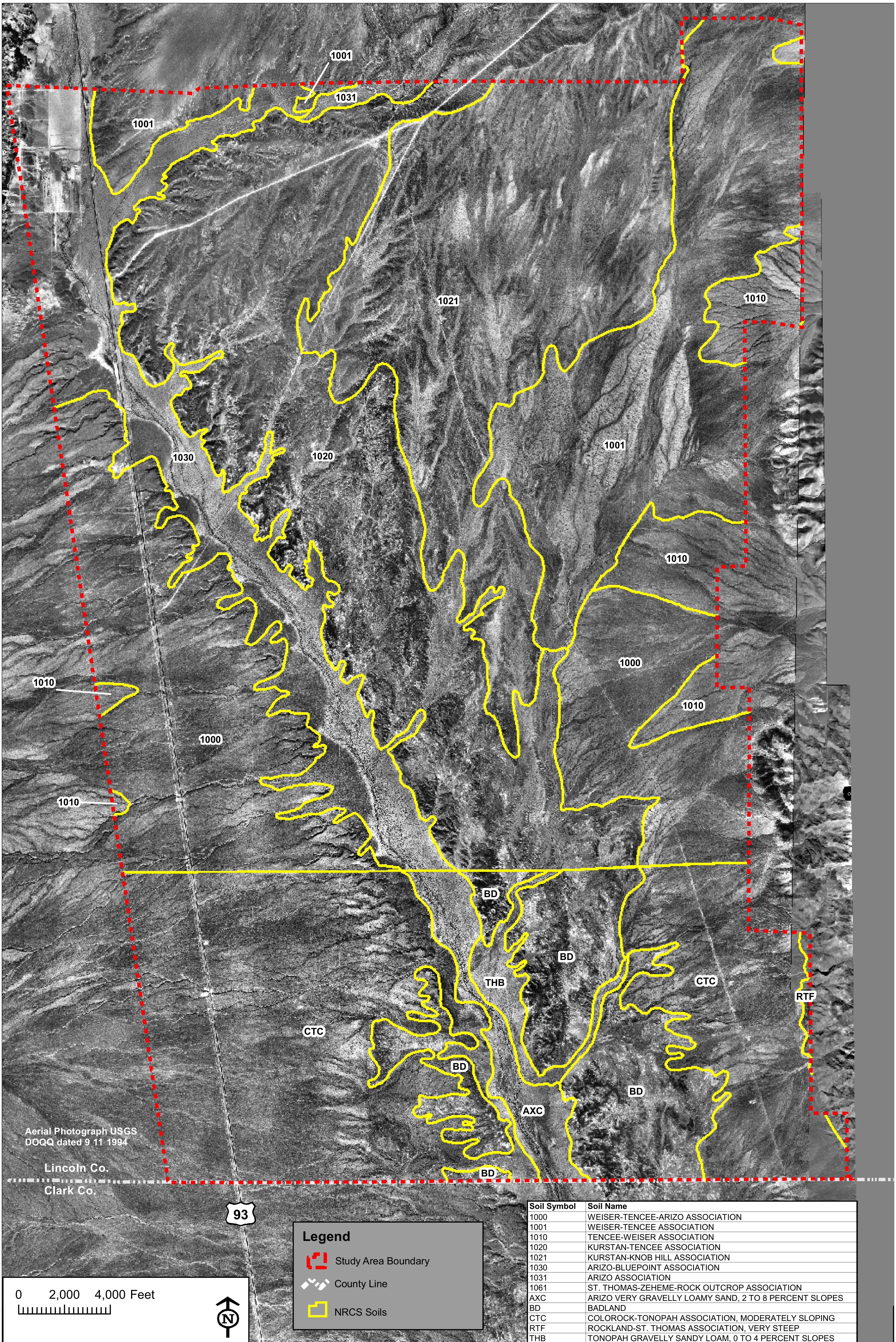
Attachment 2. USGS Topographic Map Showing Location of Study Area, Coyote Springs, Lincoln County, Nevada

Attachment 3

Soil Map, Coyote Springs Area of Study



Soil Symbol	Soil Name
1000	WEISER-TENCEE-ARIZO ASSOCIATION
1001	WEISER-TENCEE ASSOCIATION
1010	TENCEE-WEISER ASSOCIATION
1020	KURSTAN-TENCEE ASSOCIATION
1021	KURSTAN-KNOB HILL ASSOCIATION
1030	ARIZO-BLUEPOINT ASSOCIATION
1031	ARIZO ASSOCIATION
1061	ST. THOMAS-ZEHEME-ROCK OUTCROP ASSOCIATION
AXC	ARIZO VERY GRAVELLY LOAMY SAND, 2 TO 8 PERCENT SLOPES
BD	BADLAND
CTC	COLOROCK-TONOPAH ASSOCIATION, MODERATELY SLOPING
RTF	ROCKLAND-ST. THOMAS ASSOCIATION, VERY STEEP
THB	TONOPAH GRAVELLY SANDY LOAM, 0 TO 4 PERCENT SLOPES

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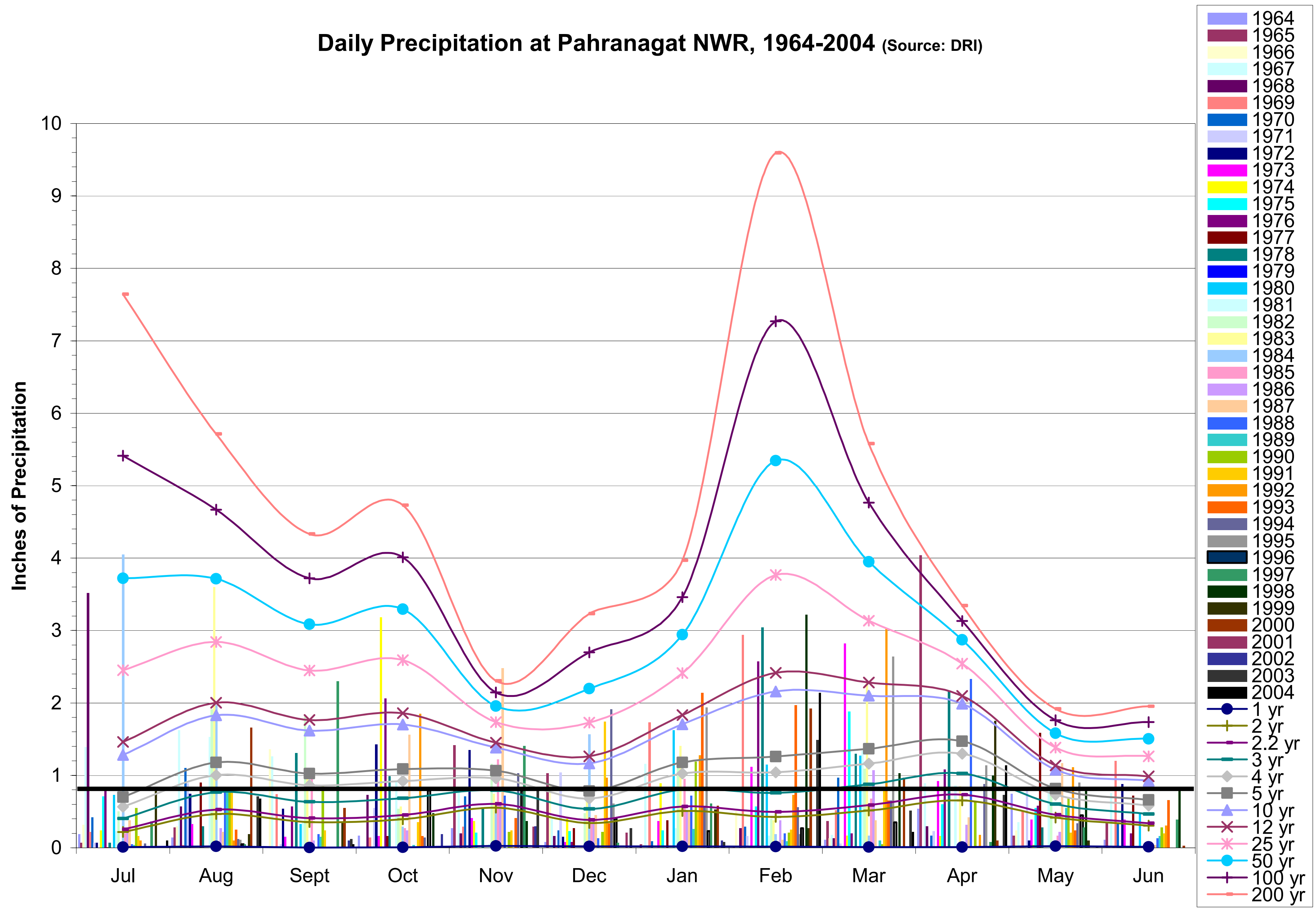
Attachment 3. Soil Map of Study Area, Coyote Springs, Lincoln County, Nevada

Attachment 4

Daily Precipitation at Pahranagat NWR



Daily Precipitation at Pahranagat NWR, 1964-2004 (Source: DRI)
Inches of Precipitation
0
1
2
3
4
5
6
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8
9
10
Jul
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
1964
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1968
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1998
1999
2000
2001
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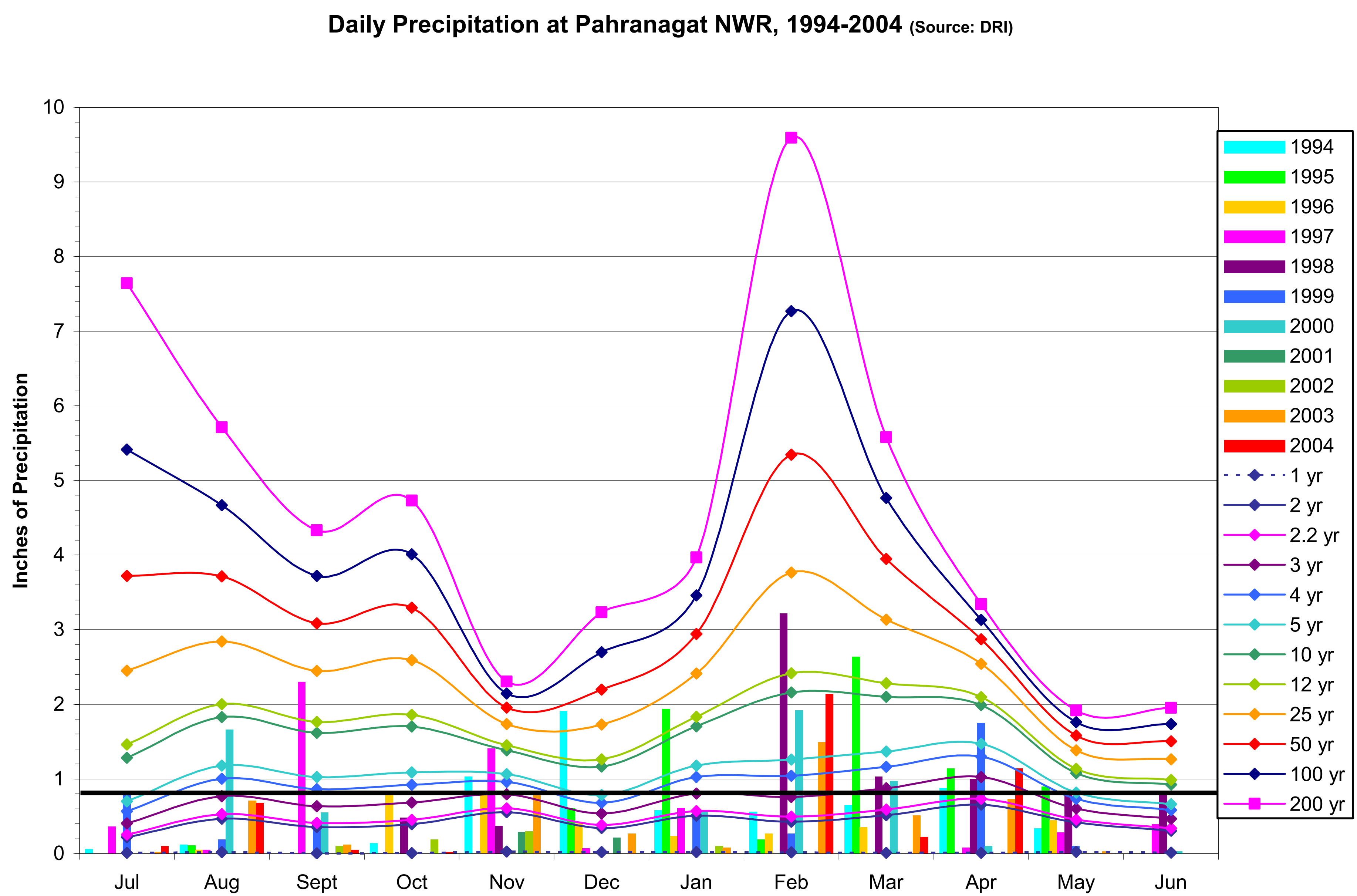
25 yr
50 yr
100 yr
200 yr



Daily Precipitation at Pahranagat NWR, 1994-2004 (Source: DRI)
Inches of Precipitation
0
1
2
3
4
5
6
7
8
9
10
Jul
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
1994
1995
1996
1997
1998
1999
2000
2001
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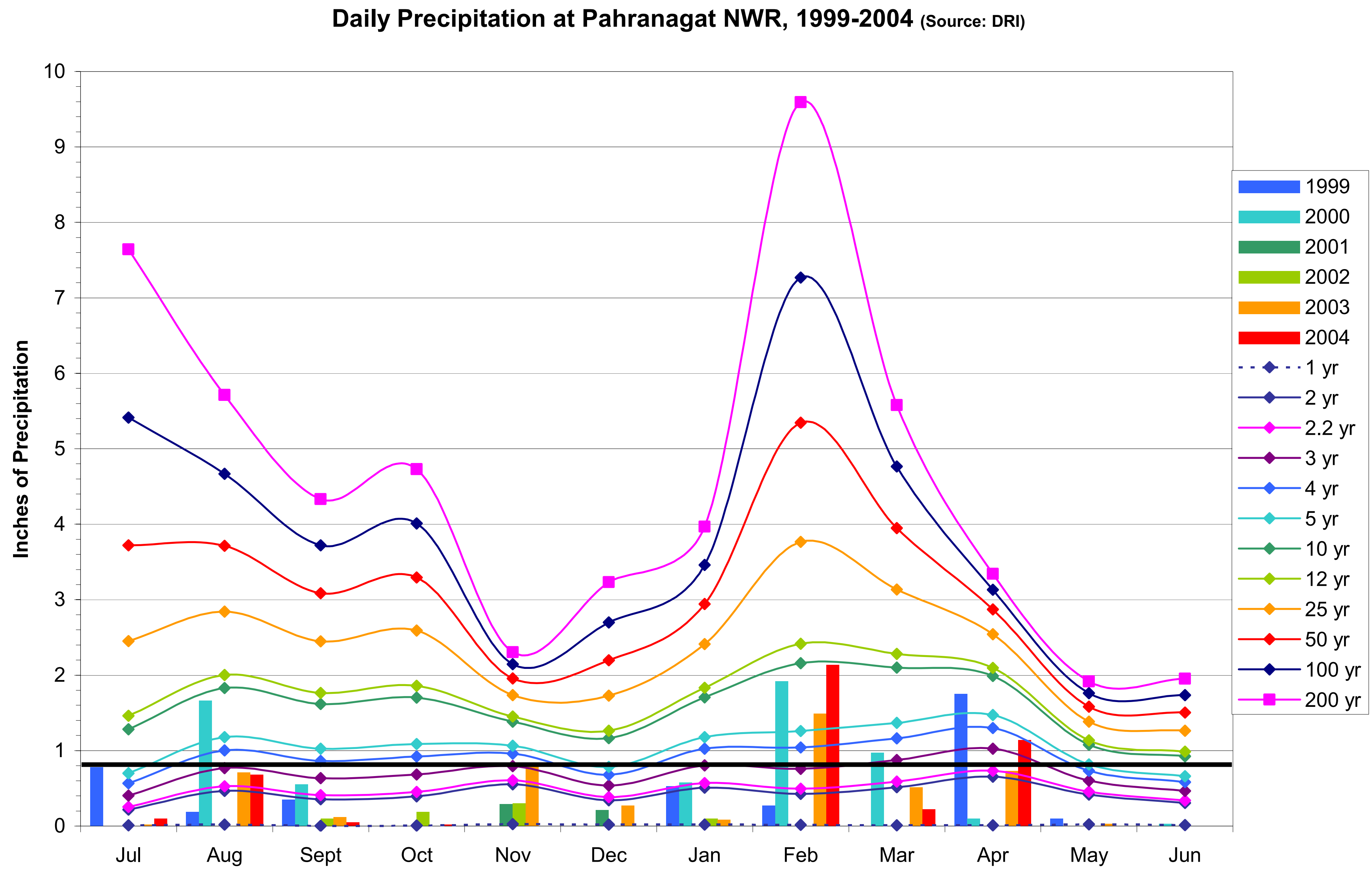
2 yr
2.2 yr
3 yr
4 yr
5 yr
10 yr
12 yr
25 yr
50 yr
100 yr
200 yr



Daily Precipitation at Pahranagat NWR, 1999-2004 (Source: DRI)
Inches of Precipitation
0
1
2
3
4
5
6
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8
9
10
Jul
Aug
Sept
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Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
1999
2000
2001
2002
2003
2004
1 yr
2 yr
2.2 yr
3 yr
4 yr
5 yr
10 yr
12 yr
25 yr
50 yr
100 yr
200 yr

Attachment 5

Plant Species Observed During Field Surveys, Coyote Springs Study/Proposed Project Areas and Their NWI Indicator Status

SCIENTIFIC NAME	COMMON NAME	WETLAND INDICATOR STATUS
TREES		
Chilopsis linearis	Desert willow	FAC
SHRUBS AND SUB-SHRUBS		
Acacia greggii	Cat-claw acacia	FACU
Ambrosia dumosa	White bursage	NL
Atriplex canescens	Four-wing saltbrush	UPL
Chrysothamnus paniculatus	Rabbit-brush	NL
Echinocerus sp.	Hedgehog cactus	NL
Encelia farinosa	White brittle-brush	NL
Ephedra nevadensis	Nevada Mormon-tea	NL
Ferocactus cylindraceus	California barrel cactus	NL
Krameria sp.	Rhatany	NL
Opuntia basilaris	Beaver tail prickly-pear	NL
Opuntia sp.	Cholla	NL
Palafoxia arida	Desert needle	NL
Psorothamnus arborescens	Indigo bush	NL
Thamnosma montana	Turpentine broom	NL
Yucca schidigera.	Mohave yucca	NL
HERBS		
Achnatherum hymenoides	Indian ricegrass	NL
Achnatherum sp.	Needlegrass	NL
Allionia incarnata	Trailing allionia	NL
Asclepias sp.	Milkweed	NA
Astragalus sp.	Milkvetch	NA
Atrichoseris platyphylla	Tobacco weed	NL
Cuscuta sp.	Dodder	NL
Eriogonum inflatum	Desert trumpet	NL
Eriogonum spp.	Wild buckwheats	NL
Hilaria rigida	Big galleta	NL
Lesquerella tenella	Moapa bladder pod	NL
Oenothera deltoides	Birdcage evening primrose	NL

Plant Species Observed During Field Surveys, Coyote Springs Study/Proposed Project Areas and Their NWI Indicator Status

SCIENTIFIC NAME	COMMON NAME	WETLAND INDICATOR STATUS
Plantago ovata	Wooly plantain	NL
Salsola tragus	Russian thistle	NL
Sphaeralcea ambigua	Desert globe mallow	NL

Indicator Status Codes:

- **OBL** = Obligate wetland; occur almost always (estimated probability >99%) under natural conditions in wetlands.
- **FACW** = Facultative Wetland; usually occur in wetlands (estimated probability 67%-99%) under natural conditions in wetlands.
- **FAC** = Facultative; equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
- **FACU** = Facultative Upland; usually occur in non-wetlands (estimated probability 67%-99%).
- **UPL** = Obligate Upland; occur almost always (estimated probability >99%) in non-wetlands in the region specified.
- **NL** = Not Listed.
- **NA =** not available without species
- **NI** = No indicator was recorded for those species for which insufficient information was available to determine a status. May or may not occur in wetlands depending upon species.
- A positive (+) sign indicated a frequency toward the higher (more frequently found in wetlands) end of the facultative categories.
- A negative (-) sign indicates a frequency toward the lower (less frequently found in wetlands) end of the facultative categories.
- An asterisk (*) indicates a tentative assignment based upon limited information or conflicting review.

Attachment 6

Drainage/ Dry Wash Field Measurement Data and Manning's Calculations, Coyote Springs, Lincoln County, Nevada

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
Drainages West of Highway 93									
C1-a	6	1	NEF						
C2-a1	24	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	60	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	84	5	Acid etched rock and lacks organic flow debris
C2-a2	12	0.5	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	50	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	95	7	Acid etched rock and lacks organic flow debris
C3-a	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	60	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	101	5	Acid etched rock and lacks organic flow debris
C3-b1	22	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	48	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	80	5	Acid etched rock and lacks organic flow debris
C3-b2	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	60	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	106	7	Acid etched rock and lacks organic flow debris
C4-a1	18	1	fine silt/sand present and lodged in vegetation at	48	3	Small rock, large sand grains, rooted grass	97	5	Acid etched rock and lacks organic flow debris

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			OHWM or vegetation islands within channel & detritus in flow patterns			material present and lodged in vegetation.			
C4-a2	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	48	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	65	5	Acid etched rock and lacks organic flow debris
C4-b	22	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	60	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	94	6	Acid etched rock and lacks organic flow debris
C5-a1	24	2	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	77	3.5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	103	9	Acid etched rock and lacks organic flow debris
C5-a2	15	1.5	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	48	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	92	5	Acid etched rock and lacks organic flow debris
C5-b1	12	1.5	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	50	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	80	7	Acid etched rock and lacks organic flow debris
C5-b2	15	1	fine silt/sand present and lodged in	72	4	Small rock, large sand grains,	108	9	Acid etched rock and lacks organic

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			vegetation at OHWM or vegetation islands within channel & detritus in flow patterns			rooted grass material present and lodged in vegetation.			flow debris
C5-c1	22	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	48	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	80	5	Acid etched rock and lacks organic flow debris
C5-c2	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	48	1.8	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	95	5	Acid etched rock and lacks organic flow debris
C6-a1	15	1.5	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	36	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	68	5	Acid etched rock and lacks organic flow debris
C6-a2	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	24	1.5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	78	5	Acid etched rock and lacks organic flow debris
C7-a1	11	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	50	2.5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	80	6	Acid etched rock and lacks organic flow debris
C7-a1	9	1	fine silt/sand present and	48	3	Small rock, large sand	89	5	Acid etched rock and

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns			grains, rooted grass material present and lodged in vegetation.			lacks organic flow debris
C8-a1	22	1.25	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	50	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	122	6	Acid etched rock and lacks organic flow debris
C8-a2	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	37	1.75	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	108	7	Acid etched rock and lacks organic flow debris
C9-a1	18	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	30	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	105	8.25	Acid etched rock and lacks organic flow debris
C9-a2	20	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	40	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	102	7.5	Acid etched rock and lacks organic flow debris
C9-b1	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	37	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	85	8	Acid etched rock and lacks organic flow debris
C9-b2	12	1	fine silt/sand	30	2	Small rock,	79	9	Acid etched

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns			large sand grains, rooted grass material present and lodged in vegetation.			rock and lacks organic flow debris
C10-a1	22	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	30	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	68	6	Acid etched rock and lacks organic flow debris
C10-a2	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	18	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	79	5	Acid etched rock and lacks organic flow debris
C11-a1	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	87	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	200	9	Acid etched rock and lacks organic flow debris
C11-a2	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	60	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	80	8	Acid etched rock and lacks organic flow debris
C11-b1	11	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	75	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	207	8	Acid etched rock and lacks organic flow debris

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
C11-b2	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	68	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	95	7.5	Acid etched rock and lacks organic flow debris
C12-a1	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	192	5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	270	9	Acid etched rock and lacks organic flow debris
C12-a2	18	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	180	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	240	8	Acid etched rock and lacks organic flow debris
C13-a1	24	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	135	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	288	8	Acid etched rock and lacks organic flow debris
C13-a2	12	1.5	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	120	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	270	7	Acid etched rock and lacks organic flow debris
C13-b1	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in	135	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	280	8	Acid etched rock and lacks organic flow debris

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			flow patterns						
C13-b2	24	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	127	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	255	8	Acid etched rock and lacks organic flow debris
C14-a1	22	1.5	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	66	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	109	6	Acid etched rock and lacks organic flow debris
C14-a2	24	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	75	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	180	7	Acid etched rock and lacks organic flow debris
C15-a1	14	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	24	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	140	5.5	Acid etched rock and lacks organic flow debris
C15-a2	18		fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	40	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	89	5	Acid etched rock and lacks organic flow debris
C15-b1	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel &	58	2.25	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	125	6	Acid etched rock and lacks organic flow debris

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			detritus in flow patterns						
C15-b2	11	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	32	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	83	5	Acid etched rock and lacks organic flow debris
C16-a1	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	50	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	102	7	Acid etched rock and lacks organic flow debris
C16-a2	24	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	32	1.5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	102	8	Acid etched rock and lacks organic flow debris
C16-b1	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	30	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	115	7.5	Acid etched rock and lacks organic flow debris
C16-b2	24	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	39	2.75	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	96	7	Acid etched rock and lacks organic flow debris
C17-a1	18	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within	30	2	Small rock, large sand grains, rooted grass material present and lodged in	110	9	Acid etched rock and lacks organic flow debris

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			channel & detritus in flow patterns			vegetation.			
C17-a2	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	28	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	102	8.5	Acid etched rock and lacks organic flow debris
C18-a1	11	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	22	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	97	8	Acid etched rock and lacks organic flow debris
C18-a2	20	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	30	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	112	7.25	Acid etched rock and lacks organic flow debris
C18-b1	24	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	35	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	95	8	Acid etched rock and lacks organic flow debris
C18-b2	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	28	2.25	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	102	7	Acid etched rock and lacks organic flow debris
C19-a1	24	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation	42	2	Small rock, large sand grains, rooted grass material present and	123	8.25	Acid etched rock and lacks organic flow debris

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			islands within channel & detritus in flow patterns			lodged in vegetation.			
C19-a2	20	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	33	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	105	7.5	Acid etched rock and lacks organic flow debris
C19-b1	18	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	27	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	110	7	Acid etched rock and lacks organic flow debris
C19-b2	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	26	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	90	7	Acid etched rock and lacks organic flow debris
C20-a1	19	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	32	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	88	7.75	Acid etched rock and lacks organic flow debris
C20-a2	24	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	39	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	102	8	Acid etched rock and lacks organic flow debris
C20-b1	26	1	fine silt/sand present and lodged in vegetation at OHWM or	40	2	Small rock, large sand grains, rooted grass material	105	8.5	Acid etched rock and lacks organic flow debris

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			vegetation islands within channel & detritus in flow patterns			present and lodged in vegetation.			
C20-b2	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	55	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	96	8	Acid etched rock and lacks organic flow debris
C21-a1	10	0.5	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	36	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	160	7	Acid etched rock and lacks organic flow debris
C21-a2	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	30	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	72	8	Acid etched rock and lacks organic flow debris
C21-b1	12	0.5	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	32	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	84	7	Acid etched rock and lacks organic flow debris
C21-b2	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	40	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	80	8	Acid etched rock and lacks organic flow debris
C22-a	16	1	Appears not to have flowed for quite some						

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			time; no sediment or organic matter						
C23-a1	18	1	Pahranagat Wash west of Hy 93;; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	80	2	Pahranagat Wash west of hy 93	155	7	Acid etched rock and lacks organic flow debris
C23-a2	15	1	Pahranagat Wash west of Hy 93;; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	48	1	Pahranagat Wash west of hy 93	145	8	Acid etched rock and lacks organic flow debris
C24-a1	10	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	48	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	130	7	Acid etched rock and lacks organic flow debris
C24-a2	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	36	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	125	8	Acid etched rock and lacks organic flow debris
C25-a1	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in	40	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	111	8	Acid etched rock and lacks organic flow debris

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			flow patterns						
C25-a2	11	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	60	3	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	108	6	Acid etched rock and lacks organic flow debris
C26-a1	15	2	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	72	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	120	8	Acid etched rock and lacks organic flow debris
C26-a2	12	0.75	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	46	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	117	8	Acid etched rock and lacks organic flow debris
C27-a1	11	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	57	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	109	8	Acid etched rock and lacks organic flow debris
C27-a2	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	90	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	122	7	Acid etched rock and lacks organic flow debris
C28-a1	22	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel &	55	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	108	9	Acid etched rock and lacks organic flow debris

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Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			detritus in flow patterns						
C28-a2	15	1.25	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	48	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	127	6	Acid etched rock and lacks organic flow debris
C29-a1	24	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	55	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	110	7	Acid etched rock and lacks organic flow debris
C29-a2	10	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	68	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	108	7	Acid etched rock and lacks organic flow debris
C30-a1	15	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	50	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	100	8	Acid etched rock and lacks organic flow debris
C30-a2	12	1	fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	48	2	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	115	7	Acid etched rock and lacks organic flow debris
Detention Basin Data Points									
D-1	24	2	Retention Basin; fine silt/sand present and lodged in vegetation at	NA	NA		NA	NA	

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			OHWM or vegetation islands within channel & detritus in flow patterns						
D-2	15	2	Retention Basin; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	NA	NA		NA	NA	
D-3	20	1	Retention Basin; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	NA	NA		NA	NA	
D-4	24	2	Retention Basin; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	NA	NA		NA	NA	
D-5	22	2	Retention Basin; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	NA	NA		NA	NA	
Kane Springs Drainage									

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
CS-a	56	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	175	5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	380	8	Acid etched rock and lacks organic flow debris
CS-b	52	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	155	5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	290	7	Acid etched rock and lacks organic flow debris
CS-c	75	0.75	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	225	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	350	7	Acid etched rock and lacks organic flow debris
CS-d	88	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	220	5.5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	314	9	Acid etched rock and lacks organic flow debris
CS-e	66	11	Covered w/grey silty clay	270	5	Small rock, large sand grains,	350	8	Acid etched rock and lacks organic

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns			rooted grass material present and lodged in vegetation.			flow debris
CS-f	95	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	111	5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	302	9	Acid etched rock and lacks organic flow debris
									Acid etched rock and lacks organic flow debris
KS-1	64	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	180	4.5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	345	8	Acid etched rock and lacks organic flow debris
KS-2	70	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	199	5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	290	9	Acid etched rock and lacks organic flow debris
KS-3	60	1	Covered w/grey silty	220	5	Small rock, large sand	330	8	Acid etched rock and

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns			grains, rooted grass material present and lodged in vegetation.			lacks organic flow debris
KS-4	67	1.5	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	200	6	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	311	9.5	Acid etched rock and lacks organic flow debris
KS-5	96	1.5	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	190	5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	255	9	Acid etched rock and lacks organic flow debris
KS-5a	20	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	100	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	214	8	Acid etched rock and lacks organic flow debris
KS-6	67	1	Covered w/grey silty clay sediments ;	109	4	Small rock, large sand grains, rooted grass	220	7	Acid etched rock and lacks organic flow debris

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			fine silt/sand present and lodged in vegetation. & detritus in flow patterns			material present and lodged in vegetation.			
KS-7	79	1	Covered w/grey silty clay sediments ; fine silt/sand present and lodged in vegetation. & detritus in flow patterns	200	5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	344	8	Acid etched rock and lacks organic flow debris
KS-8	77	2	Covered w/grey silty clay sediments ; fine silt/sand present and lodged in vegetation. & detritus in flow patterns	220	6	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	280	8.5	Acid etched rock and lacks organic flow debris
KS-9	28	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation. & detritus in flow patterns	155	4	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	277	7.5	Acid etched rock and lacks organic flow debris
KS-10 (12)	77	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation. & detritus in flow patterns	186	5	Small rock, large sand grains, rooted grass material present and lodged in vegetation.	234	9	Acid etched rock and lacks organic flow debris
Pahranagat Wash									
PW-x	72	3	Pahranagat Wash West of State HY 93; not covered w/ w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-y	22	1	Pahranagat	NA	NA		NA	NA	

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			Wash West of State HY 93; not covered w/ w/grey silty clay	(made poly line w/GPS)	(measured to OHWM)				
PW-1	372	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-2	660	5	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-3	318	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-4	240	5	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-5	252	3	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-6	36	8	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-7	252	3	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-8	168	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-9	108	6	Pahranagat Wash east of hy 93; Covered w/grey silty	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			clay						
PW-10	336	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-11	144	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-12	360	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-13	72	3	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-14	168	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-15	372	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-16	108	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-17	66	7	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-18	264	5	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-19	168	6	Pahranagat Wash east of hy 93; Covered	NA (made poly line	NA (measured to OHWM)		NA	NA	

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			w/grey silty clay	w/GPS)					
PW-20	192	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-21	72	5	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-22	120	3	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-23	210	6	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-24	246	5	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-25	168	5	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-26	156	5	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
PW-27	82.8	7	Pahranagat Wash east of hy 93; Covered w/grey silty clay	NA (made poly line w/GPS)	NA (measured to OHWM)		NA	NA	
Drainages Northeast of Old Highway 93									
T-1	22	1	Covered w/grey silty clay sediments; fine silt/sand present and	35	2	Old wood pieces	80	6	

Attachment 6 Table 1 Field Data, Coyote Springs, Lincoln County, Nevada									
Drainage Location	**Low Channel**			**Medium Channel**			**High Channel**		
	Width (inches)	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*	*Width (inches)*	*Depth (inches)*	*Comment*
			lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns						
T-2	15	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	28	1.5	Old wood pieces	97	5	
T-3	11	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	30	3		100	7	
T-4	12	1	Covered w/grey silty clay sediments; fine silt/sand present and lodged in vegetation at OHWM or vegetation islands within channel & detritus in flow patterns	60	3	Old wood pieces	1055	6.5	
T-5	12	1		35	2.5		92	5.5	
Notes: PW-=Pahranagat Wash data points; NEF=no evidence of recent flow; CS & KS= Kane Springs Wash data points; D=detention basin data points; C= data points in drainages west of HY 93 ; NA= not applicable.									

Attachment 6. Table 2
Field Data, Coyote Springs, Lincoln County, Nevada Continued

Reach Name	Point #	Width of Low Flow Channel (ft.)	Low Average Depth (in.)	Width of Mid Flow Channel (ft.)	Mid Average Depth (in.)	Width of High Flow Channel (ft.)	High Average Depth (in.)	Indicators
Upper East Side Drainages								
BL 1	BL 1-1D	N/A	N/A	N/A	N/A	N/A	N/A	Downstream from old 93; broad drainage; heavily vegetated with shrubs and perennial grasses; NON JURISDICTIONAL
BL 2	BL 2TO-XS	18.0	1.0	37.0	2.0	37.0	3.0	Heavily vegetated; no sign of flow; defined gully; no defined drainage upstream from road
BL 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Multiple channels above and below road; BL 3 is no longer the main channel; Berm on upstream side of road directs flow into channel north of BL 3
BL 3	BL 3-1U	12.0	1.0	33.6	4.0	33.6	6.0	Sparsely vegetated in channel most shrubs on edge may be due to cementing.
BL 3	BL 3-1D	12.0	1.0	91.2	1.0	91.2	2.0	Bedrock of cemented alluvium; well defined channel; no sign of flow within five years; HML determined by vegetation change
BL 4A	BL 4A-1D	14.4	0.5	37.2	6.0	37.2	5.0	Arizona Crossing; no channel upstream from road; channel is well defined and carved into cemented alluvium; HML defined by shelving; no evidence of recent flow
BL 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Evidence of recent ponding upstream from road but no defined channel flowing into depression
BL 4	BL 4-1D	8.0	0.5	26.4	1.0	26.4	2.5	Small channel through large, densely vegetated wash
BL 5	BL 5-1D	22.8	0.5	70.8	1.5	70.8	2.0	No defined channel; very difficult to determine HML; heavily vegetated with shrubs and perennial grasses
BL 5	BL 5-1U	10.8	0.5	26.4	1.0	26.4	2.0	Shrubs and perennial grasses growing in channel
BL 6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No evidence of flow or overtopping; signs of ponded water above road
BL 7B	BL 7B-1U	4.8	0.5	25.2	1.0	25.2	3.0	Evidence of flow over road at Arizona Crossing; small channel with gravel bed; no defined banks
BL 7AB	BL 7AB	21.6	1.0	55.2	3.0	55.2	5.0	Junction of BL 7A and BL 7B; 7A is braided and obscure upstream from junction; 7B is moderately vegetated with defined

Reach Name	Point #	Width of Low Flow Channel (ft.)	Low Average Depth (in.)	Width of Mid Flow Channel (ft.)	Mid Average Depth (in.)	Width of High Flow Channel (ft.)	High Average Depth (in.)	Indicators
								channel appearing occasionally upstream from junction; occasional acacia
BL 7A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Small channel above road; no evidence of flow
BL 7A	BL 7A-1U	4.0	0.5	28.8	1.0	28.8	5.0	Data point indicated top of drainage based on presence of vegetation and loss of defined bed and bank; no evidence of recent flow
BL 7	BL 7-1D	9.6	1.0	66.0	1.0	66.0	1.5	Gravel bed; some acacia; no signs of recent flow; HML determined by shelving
BL 7	BL 7-1U	12.0	0.5	33.6	1.0	33.6	4.0	Arizona Crossing; wash splits into several small, heavily vegetated swales; no evidence of flow
BL 8A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Non jurisdictional unblocked drainage; no evidence of flow; heavily vegetated Arizona Crossing
BL 8	BL 8-1U	21.6	1.0	58.8	2.0	58.8	3.0	Wash consists of 2-3 braided channels only sometimes forming one main channel; HML determined by change in substrate size
BL 8	BL 8-1D	14.4	0.5	82.8	4.0	82.8	8.0	HML determined by shelving, changes in substrate size, and defined banks
BL 9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Non jurisdictional blocked drainage; no evidence of flow; evidence of ponding upstream, dense vegetation downstream from road
BL 10C	BL 10C	15.6	1.0	46.8	1.0	46.8	5.0	Downstream channel braids and disperses after data point; HML determined by change in substrate size and defined banks
BL 10C	BL 10C-1U	N/A	N/A	N/A	N/A	N/A	N/A	Two vegetated channels merge above road to form defined drainage below road; no defined channel; thick cover of shrubs and perennial forbs; no evidence of recent flow
BL 10B	BL 10B-1U	10.8	0.5	39.6	3.0	39.6	3.0	Unblocked drainage; converges downstream with BL 10, upstream forks into A and B; deep, well defined channel but no evidence of recent flow; dry waterfalls carved into cemented bedrock; heavily vegetated; some acacia
BL 10A	BL 10A-1U	19.2	1.0	81.6	2.0	81.6	5.0	Little vegetation in channel; occasional shrubs
BL 10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Arizona Crossing; Sediment deposits on road from overtopping
BL 10	BL 10-1D	18.0	0.5	56.4	3.0	56.4	9.0	HML determined by shelving, changes in substrate size, and defined banks; occasional acacia

Reach Name	Point #	Width of Low Flow Channel (ft.)	Low Average Depth (in.)	Width of Mid Flow Channel (ft.)	Mid Average Depth (in.)	Width of High Flow Channel (ft.)	High Average Depth (in.)	Indicators
BL 10	BL 10-1U	38.4	2.0	67.2	4.0	67.2	8.0	Lack of vegetation in channel; occasional shrub; defined bed and bank
BL 11B	BL 11B-ID	25.2	1.0	57.6	4.0	57.6	4.0	Well defined channel; 4ft banks in places; no evidence of recent flow
BL 11B	BL 11B Top	6.0	0.5	12.0	1.0	12.0	2.0	Arizona Crossing; Vegetated swale; channel braids and dissipates upstream from data point; sand and gravel deposits on road are evidence of overtopping
BL 11	BL 11-1D	18.0	0.5	38.4	3.0	38.4	6.0	No evidence of recent flows; channel braids and dissipates below data point.
BL 11	BL 11-1U	15.6	1.0	26.4	2.0	26.4	2.0	No vegetation in channel; evidence of ponding on upstream side of road but no sign of overtopping
BL 12	BL 12-1D	21.6	1.0	96.0	2.0	96.0	2.0	Arizona Crossing; no defined channel at road; HML defined by shelving and change in substrate size; many acacia
BL 12	BL 12-1U	74.4	1.0	136.8	1.0	136.8	3.0	No vegetation in channel; HML defined by change in substrate size
BL 13	BL 13-1D	12.0	0.3	144.0	0.5	144.0	1.0	HML defined by break in slope, vegetation, and substrate; no evidence of recent flow; some acacia
BL 13	BL 13-1U	16.8	0.5	80.4	3.0	80.4	3.0	Arizona Crossing; HML defined by change in substrate size and bank
BL 14	BL14-1D	12.0	0.3	120.0	0.5	120.0	1.0	No evidence of recent flow; Channel consisted of lightly vegetated, sandy swale
BL 14	BL 14-1U	28.8	1.0	68.4	2.0	68.4	3.0	HML defined by change in substrate size and shelving
BL 15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No evidence of overtopping at old culvert, some evidence of overtopping at low point in road to the north; no bed and bank upstream; some evidence of ponding above road;
BL 15	BL 15-1	24.0	0.5	132.0	1.0	132.0	8.0	Data point indicates the top of the defined channel
BL 15	BL 15-2D	24.0	0.5	74.4	2.0	74.4	4.0	Evidence of recent flow: shelving, lack of veg. debris. Data point taken at unique confined area.
BL 15	BL 15-3D	38.4	1.5	135.6	2.0	135.6	4.0	Data point taken at relatively confined area next to cliff.
BL 15	BL 15-4	67.2	0.5	270.0	6.0	270.0	8.0	Next to berm, presumably to keep flow off road. Fairly braided.
BL 15B	BL 15B-1U	27.6	0.5	51.6	3.0	51.6	4.0	Up stream from dirt road, Braided dispersed across the road. HML based on shelving, change in veg, and change in substrate.

Reach Name	Point #	Width of Low Flow Channel (ft.)	Low Average Depth (in.)	Width of Mid Flow Channel (ft.)	Mid Average Depth (in.)	Width of High Flow Channel (ft.)	High Average Depth (in.)	Indicators
Lower East Side Drainages								
ED 1	ED 1-1	33.6	0.2	93.6	2.0	93.6	5.0	Confined at data point, some evidence of recent flow. Dead acacia and some vegetation in channel
ED 2	ED 2-1	49.2	1.0	117.6	1.0	117.6	4.0	Sandy braided channel with evidence of recent flow. Channel is mostly confined at data point. HML by bed and bank and shelving.
ED 3	ED 3-1	60.0	1.0	108.0	2.0	108.0	3.0	Sandy braided channel with evidence of recent flow. Channel is mostly confined at data point. HML by bed and bank and shelving.
ED 3	ED 3A-1	48.0	1.0	120.0	4.0	120.0	5.0	Sandy braided channel with evidence of recent flow. Channel is mostly confined at data point. HML by bed and bank and shelving.
ED 3	ED 3B-1	24.0	2.0	96.0	5.0	96.0	8.0	Sandy braided channel with evidence of recent flow. Channel is mostly confined at data point. HML by bed and bank and shelving.
ED 4	ED 4-1	19.2	0.3	88.8	1.0	88.8	2.5	Shallow, sandy channel. Fairly consolidated, some signs of recent flow, some vegetation in channel. HML determined by change in substrate and shelving.
ED 5	ED 5-1	24.0	1.0	120.0	1.5	120.0	3.0	Sandy channel with evidence of recent flow. Channel is mostly confined at data point. HML by bed and bank and shelving.
ED 5	ED 5-2	30.0	0.5	180.0	2.0	180.0	3.0	Sandy channel with evidence of recent flow. Channel is mostly confined at data point. HML by bed and bank and shelving.
ED 6	ED 6-1	24.0	1.0	204.0	2.0	204.0	3.0	Sandy channel with evidence of recent flow. Channel is mostly confined at data point. HML by bed and bank and shelving.
ED 6	ED 6-2	18.0	0.5	72.0	2.0	72.0	4.0	Sandy channel with evidence of recent flow. Channel is mostly confined at data point. HML by bed and bank and shelving.
ED 7	ED 7-1	24.0	1.0	144.0	2.0	144.0	3.0	Sandy channel with evidence of recent flow. Channel is mostly confined at data point. HML by bed and bank and shelving.
ED 7	ED 7-2	12.0	0.5	132.0	2.0	132.0	3.0	Sandy channel with evidence of recent flow. Channel is mostly confined at data point. HML by bed and bank and shelving.

Reach Name	Point #	Width of Low Flow Channel (ft.)	Low Average Depth (in.)	Width of Mid Flow Channel (ft.)	Mid Average Depth (in.)	Width of High Flow Channel (ft.)	High Average Depth (in.)	Indicators
ED 8	ED 8-1	69.6	1.0	159.6	3.0	159.6	2.0	Wide shallow channel. Obvious signs of recent flow, evidence of ponding nearby.
ED 8	ED 8-2	33.6	0.5	80.4	1.0	80.4	1.0	No signs of flow. Detritus accumulating in channel. HML based on change in substrate size.
ED 8	ED 8-3	N/A	N/A	N/A	N/A	N/A	N/A	No defined low and medium flow channels. Animal burrows in channel, Perennial and annual vegetation in channel. No signs of flow.
ED 9	ED 9-1	44.4	0.5	96.0	0.5	96.0	4.0	Defined bed and bank, braided above. No vegetation in channel. Minimal drift material.
ED 10	ED 10-1	84.0	0.3	172.8	2.0	172.8	3.0	Defined bed and bank at data point, braided above and below. Data point is just below a major confluence.
ED 11	ED 11-PW	N/A	N/A	N/A	N/A	N/A	N/A	Junction of Pahranagat wash and ED 11.
ED 11	ED 11-1	26.4	0.3	79.2	0.5	79.2	3.0	No strong indicators of recent flow. Very braided and sandy.
Upper West Side Drainages								
C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Buried culvert, completely blocked, no flow.
C2	C 2-1	10.0	1.0	48.0	2.0	48.0	5.0	20" culvert, completely buried on upstream side; no evidence of flow; well vegetated
C3	C 3-1	34.8	1.5	79.2	3.0	79.2	6.0	24" culvert, mostly blocked; high flow marks in vegetation; no evidence of recent flow; substrate is gravel and cobble
C4	C 4-1	23.0	1.0	124.0	4.0	124.0	6.0	22" culvert, 1/4 buried; ditch to the south may bypass this drainage, watershed effected by gravel piles
C5	C 5-1	36.0	2.0	117.6	3.0	117.6	4.0	24" culvert; sediment on upstream side but no evidence of overflow
C6	C 6-1	16.0	2.0	31.0	4.0	31.0	5.0	22" culvert; Watershed reduced by gravel piles upstream
C7	C 7-1	30.0	1.5	86.4	3.0	86.4	8.0	24" culvert; apparent ponding upstream from culvert; evidence of overtopping
C8	C 8-1	28.0	1.5	84.0	2.0	84.0	8.0	24" culvert, blocked on downstream side by recent grading; obvious overtopping
C9	C 9-1	18.0	1.0	156.0	6.0	156.0	24.0	24" culvert; wash is deeply incised; HML determined by shelving,

Reach Name	Point #	Width of Low Flow Channel (ft.)	Low Average Depth (in.)	Width of Mid Flow Channel (ft.)	Mid Average Depth (in.)	Width of High Flow Channel (ft.)	High Average Depth (in.)	Indicators
								and changes in substrate size
C10	C 10-1	19.0	1.0	48.0	4.0	48.0	6.0	28" culvert; minor overtopping, HML determined by shelving and changes in substrate size
C11A	C 11A-1	24.0	1.0	102.0	1.5	102.0	16.8	36" culvert; channel is blocked upstream from culvert by gravel pile; evidence of ponding
C11B	C 11B-1	30.0	0.5	84.0	5.0	84.0	12.0	22" culvert, totally blocked on upstream side; obvious overtopping
C12	C 12-1	42.0	0.5	214.8	5.0	214.8	8.0	48" culvert; large debris lines, sediment, and evidence of ponding; evidence of overtopping
C12	C 12-2	24.0	1.0	144.0	3.0	144.0	5.0	Very defined channel
C13	C 13-1	25.2	1.5	144.0	4.0	144.0	20.0	60" culvert; apparent ponding within channel, debris marks high on channel edge but does not appear to have overtopped road; HML determined by bed and banks, shelving, and changes in substrate
C14	C 14-1	9.0	0.5	20.0	1.0	20.0	3.0	30" culvert; blocked by road; over topped Hwy
C14	C 14-2	14.0	0.5	60.0	1.5	60.0	3.0	Very confined location--shelving
C14	C 14-3	16.0	1.0	96.0	2.0	96.0	4.0	shelving
C14	C 14-4	35.0	1.5	48.0	3.0	48.0	6.0	at top of where opens up onto fan; shelving
C14	C 14-5	10.0	1.0	60.0	2.0	60.0	3.0	in PW flood plain
C15	C 15-1	15.0	1.5	48.0	2.0	48.0	3.0	30" culvert; plugged at highway
C15	C 15-2	42.0	0.5	60.0	3.0	60.0	5.0	
C16	C 16-1	30.0	0.5	72.0	3.0	72.0	5.0	50" culvert; recently over-topped road; v. confined location
C16	C 16-2	16.0	1.5	48.0	2.0	48.0	4.0	Confined reach--shelving
C16	C 16-3	23.0	1.5	96.0	2.0	96.0	3.0	Fairly confined in the middle of loads of acacia
C16	C 16-4	29.0	0.5	120.0	2.0	120.0	3.0	Just below the confl. with other braid from north; on braided fan
C16	C 16-PW	12.0	1.0	36.0	1.5	36.0	2.0	confusing location; shelving
C17	C 17-1	24.0	2.0	60.0	4.0	60.0	6.0	50" culvert; evidence of flow over hwy; lots of acacia; broad wide braided channel
C17	C 17-2	24.0	1.5	72.0	4.0	72.0	8.0	broad wide braided channel
C17	C 17-3	10.0	2.5	36.0	5.0	36.0	7.0	channel is totally confined at this point
C17	C 17-4	46.0	0.5	50.0	1.0	50.0	2.0	Just above confl with PW

Reach Name	Point #	Width of Low Flow Channel (ft.)	Low Average Depth (in.)	Width of Mid Flow Channel (ft.)	Mid Average Depth (in.)	Width of High Flow Channel (ft.)	High Average Depth (in.)	Indicators
C18	C 18-1	25.0	1.5	72.0	3.0	72.0	6.0	7 foot oval culvert
C18	C 18-2	19.0	0.5	30.0	2.0	30.0	6.0	
C19	C 19-1	15.0	1.5	36.0	4.0	36.0	6.0	32" culvert; confined, narrow canyon
C19	C 19-2	15.0	1.5	60.0	3.0	60.0	4.0	shelving
C20	C 20-1	27.0	2.0	48.0	6.0	48.0	8.0	7 foot oval culvert; shelving
C20	C 20-1	18.0	2.0	36.0	4.0	36.0	8.0	shelving
C20	C 20-3	15.0	1.5	30.0	3.0	30.0	4.0	v. braided broad fan
C21	C 21-1	10.8	1.0	24.0	3.0	24.0	4.0	12" culvert; gravel, small cobble; shelving
C21	C 21-2	12.0	2.0	36.0	4.0	36.0	6.0	substrate change, shelving
C21	C 21-3	12.0	2.0	24.0	4.0	24.0	6.0	substrate change, shelving
C22	C 22-1	18.0	1.5	60.0	3.0	60.0	4.0	24" culvert; several acacia; shelving
C22	C 22-2	21.0	1.0	48.0	4.0	48.0	6.0	several acacia, shelving
C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2 box culverts each 4.5' x 8'; no defined connection to Pahranagat
C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2 box culverts each 6' tall and 10' wide, ponded, no outflow channel
Lower West Side Drainages								
WD1	WD 1-1	39.6	0.5	122.4	1.0	122.4	4.0	Braided throughout. Several acacia present. Evidence of recent flow. HML determined by bed and bank and change in substrate
WD2	WD 2-1	19.2	1.0	40.8	3.0	40.8	4.0	Numerous small channels in area, no sign of flow but no veg in channel.
WD3	WD 3-1	24.0	1.0	60.0	6.0	60.0	9.0	shelving
WD4	WD 4-1	36.0	3.0	240.0	8.0	240.0	10.0	shelving
WD5	WD 5-1	60.0	3.0	108.0	6.0	108.0	10.0	shelving
WD6	WD 6-1	48.0	1.0	120.0	3.0	120.0	4.0	shelving
WD7A	WD 7A-1	36.0	1.0	108.0	4.0	108.0	6.0	This is a secondary channel to the north of 12-2, which takes the main flow.

Reach Name	Point #	Width of Low Flow Channel (ft.)	Low Average Depth (in.)	Width of Mid Flow Channel (ft.)	Mid Average Depth (in.)	Width of High Flow Channel (ft.)	High Average Depth (in.)	Indicators
WD7A	WD 7A-2	36.0	1.0	96.0	3.0	96.0	4.5	shelving
WD8	WD 8-1	60.0	1.0	120.0	3.0	120.0	3.5	shelving
Kane Springs Road Area Drainages								
KR 1	KR 1-1	15.6	1.0	88.8	5.0	88.8	10.0	Some evidence of recent flow; no vegetation in channel; HML determined by distinct shelving and changes in substrate size.
KR 2	KR 2-1	18.0	1.0	80.4	0.5	80.4	2.0	No channel upstream from road; evidence of recent flow; HML determined by shelving and lack of vegetation
KR 3	KR 3-1	20.4	0.5	43.2	0.5	43.2	1.0	Matches blue line on Topo.; HML determined by shelving and lack of vegetation
KR 4	KR 4-1	32.4	0.5	60.0	2.0	60.0	3.0	No channel upstream from road; evidence of recent flow; HML determined by shelving and lack of vegetation
Kane Springs Wash								
KS	KS BOT	60.0	1.0	120.0	6.0	120.0	8.0	Shelving, change in substrate, scour, lack of veg
KS 1	KS 1	111.6	1.0	247.2	4.0	247.2	10.0	Very defined very confined adjacent to road. Dark brown clay color fine seds in wash.

NA = not applicable
HML = High, medium, and low channel dimensions
Arizona crossing – floodable road dip

Manning's Calculations[1] and Comparison with Empirical Formulas

Point #	Width of Low Flow Channel (in.)	Low Average Depth (in.)	Low Q (cfs)	Width of Mid Flow Channel (in.)	Mid Average Depth (in.)	Mid Q (cfs)	Width of High Flow Channel (in.)	High Average Depth (in.)	High Q (cfs)	Watershed Area (acres.)	Slope	Rational Q (cfs)	USGS Q (cfs)
Upper East Side Drainages													
BL 2TO-XS	18.00	1.00	0.52	37.00	2.00	2.28	72	3	8.86	282	0.100	1.69	7.45
BL 3-1U	12.00	1.00	0.34	33.60	4.00	6.11	94.8	6	36.10	518	0.100	3.11	10.62
BL 3-1D	12.00	1.00	0.34	91.20	1.00	1.87	168	2	10.93	518	0.100	3.11	10.62
BL 4A-1D	14.40	0.50	0.14	37.20	6.00	12.73	187.2	5	55.01	320	0.100	1.92	8.03
BL 4-1D	8.00	0.50	0.06	26.40	1.00	0.42	54	2.5	3.87	320	0.06	1.92	8.03
BL 5-1D	22.80	0.50	0.23	70.80	1.50	2.91	139.2	2	9.34	320	0.11	1.92	8.03
BL 5-1U	10.80	0.50	0.12	26.40	1.00	0.61	57.6	2	4.24	320	0.14	1.92	8.03
BL 7B-1U	4.80	0.50	0.03	25.20	1.00	0.39	45.6	3	4.29	192	0.06	1.15	5.97
BL 7AB	21.60	1.00	0.73	55.20	3.00	7.72	96	5	31.55	320	0.13	1.92	8.03
BL 7A-1U	4.00	0.50	0.04	28.80	1.00	0.74	56.4	5	19.88	128	0.17	0.77	4.72
BL 7-1D	9.60	1.00	0.35	66.00	1.00	1.77	87.6	1.5	4.61	320	0.17	1.92	8.03
BL 7-1U	12.00	0.50	0.16	33.60	1.00	0.95	103.2	4	29.05	320	0.20	1.92	8.03
BL 8-1U	21.60	1.00	0.69	58.80	2.00	4.03	117.6	3	16.02	1,280	0.12		17.94
BL 8 UA	12.00	1.00	0.24	12.00	1.00	1.32	72	2.0	4.97	192	0.12	1.15	5.97
BL 8 UB	21.60	1.00	0.46	12.00	1.00	1.32	108	3.0	14.67	832	0.12		13.97
BL 8 UB1	12.00	1.00	0.24	12.00	1.00	1.32	72	2.0	4.97	192	0.12	1.15	5.97
BL 8 UB2	12.00	1.00	0.24	12.00	1.00	1.32	96	2.5	9.64	320	0.12	1.92	8.03
BL 8-1D	14.40	0.50	0.14	82.80	4.00	16.78	122.4	8	77.15	1,280	0.11		17.94
BL 10C	15.60	1.00	0.28	46.80	1.00	0.60	84	5	14.99	128	0.04	0.77	4.72
BL 10B-1U	10.80	0.50	0.06	39.60	3.00	2.83	90	3	6.76	128	0.04	0.77	4.72
BL 10A-1U	19.20	1.00	0.34	81.60	2.00	3.14	138	5	24.08	128	0.04	0.77	4.72
BL 10-1D	18.00	0.50	0.05	56.40	3.00	1.95	115.2	9	24.13	512	0.01	3.07	10.54
BL 10-1U	38.40	2.00	0.96	67.20	4.00	3.51	180	8	30.37	512	0.01	3.07	10.54
BL 11B-ID	25.20	1.00	0.43	57.60	4.00	6.33	153.6	4	17.81	512	0.03	3.07	10.54
BL 11B top	6.00	0.50	0.03	12.00	1.00	0.13	24	2	0.82	512	0.03	3.07	10.54

Point #	Width of Low Flow Channel (in.)	Low Average Depth (in.)	Low Q (cfs)	Width of Mid Flow Channel (in.)	Mid Average Depth (in.)	Mid Q (cfs)	Width of High Flow Channel (in.)	High Average Depth (in.)	High Q (cfs)	Watershed Area (acres.)	Slope	Rational Q (cfs)	USGS Q (cfs)
BL 11-1D	18.00	0.50	0.12	38.40	3.00	3.07	93.6	6	24.15	512	0.05	3.07	10.54
BL 11-1U	15.60	1.00	0.32	26.40	2.00	1.12	36	2	1.56	512	0.05	3.07	10.54
BL 12-1D	21.60	1.00	0.42	96.00	2.00	4.12	135.6	2	5.86	9,024	0.04		55.68
BL 12-1U	74.40	1.00	1.57	136.80	1.00	1.94	320.4	3	28.26	9,024	0.05		55.68
BL 12Ua	12.00	1.00	0.15	24.00	2.00	6.42	228	3.00	20.01	3,610	0.05		32.73
BL 12Ub	30.00	2.00	1.25	24.00	2.00	6.42	228	3.0	20.01	3,610	0.05		32.73
BL 12UC	20.00	1.50	0.49	24.00	2.00	6.42	192	2.5	12.44	1,805	0.05		21.89
BL 12Ub1	12.00	1.00	0.15	24.00	2.00	6.42	192	2.5	12.44	2,406	0.05		25.87
BL 12Ub2	20.00	1.00	0.26	24.00	2.00	3.70	144	2.5	9.28	1,203	0.05		17.31
BL 12Ub2a	12.00	1.00	0.15	12.00	1.00	0.84	120	1.5	3.32	241	0.05	0.18	6.80
BL 12Ub2b	12.00	1.00	0.15	18.00	1.50	2.31	132	2.0	5.88	722	0.05	4.33	12.87
BL 12Ub2c	12.00	1.00	0.15	12.00	1.00	0.50	120	1.5	3.32	241	0.05	0.18	6.80
BL 12UC1	12.00	1.00	0.15	12.00	1.00	0.50	132	2.0	5.88	361	0.05	0.14	8.61
BL 12UC2	12.00	1.00	0.15	18.00	1.50	2.31	144	2.5	9.28	1,083	0.05		16.28
BL 13-1D	12.00	0.25	0.02	144.00	0.50	0.56	174	1	2.15	7,040	0.04		48.22
BL 13-1U	16.80	0.50	0.10	80.40	3.00	6.13	120	3	9.29	7,040	0.04		48.22
BL 13Ua	30.00	1.50	0.71	24.00	2.00	2.34	108	3.0	8.33	4,693	0.04		38.11
BL 13Ub	11.00	1.00	0.14	24.00	2.00	2.34	96	2.5	5.48	2,347	0.04		25.50
BL 13Ua1	15.00	1.00	0.18	24.00	2.00	2.34	84	2.5	4.77	1,564	0.04		20.15
BL 13Ua2	12.00	1.00	0.14	24.00	2.00	2.34	102	2.5	5.83	3,129	0.04		30.12
BL 13Ua1a	12.00	1.00	0.14	18.00	1.50	0.86	72	2.0	2.83	782	0.04	4.69	13.48
BL 13Ua1b	12.00	1.00	0.14	18.00	1.50	0.86	72	2.0	2.83	782	0.04	4.69	13.48
BL 13Ua2a	12.00	1.00	0.14	24.00	2.00	2.34	96	2.5	5.48	2,816	0.04		28.34
BL 13Ua2b	12.00	1.00	0.14	12.00	1.00	0.45	60	2.0	2.34	313	0.04	1.88	7.92
BL 13Ua2a1	12.00	1.00	0.14	12.00	1.00	0.45	60	1.5	1.46	261	0.04	1.56	7.13
BL 13Ua2a2	12.00	1.00	0.14	18.00	1.50	0.86	60	2.0	2.34	521	0.04	3.07	10.66
BL 13Ua2a2a	12.00	1.00	0.14	12.00	1.00	0.45	60	1.5	1.46	261	0.04	1.56	7.13
BL 13Ua2a2b	12.00	1.50	0.26	12.00	1.00	0.45	60	1.5	1.46	261	0.04	1.56	7.13

Point #	Width of Low Flow Channel (in.)	Low Average Depth (in.)	Low Q (cfs)	Width of Mid Flow Channel (in.)	Mid Average Depth (in.)	Mid Q (cfs)	Width of High Flow Channel (in.)	High Average Depth (in.)	High Q (cfs)	Watershed Area (acres.)	Slope	Rational Q (cfs)	USGS Q (cfs)
BL 13Ub1	6.00	1.00	0.06	12.00	1.00	0.45	60	1.0	0.75	100	0.04	0.60	4.09
BL 13Ub2	6.00	1.00	0.06	12.00	1.00	0.45	72	1.5	1.77	300	0.04	1.80	7.73
BL14-1D	12.00	0.25	0.01	120.00	0.50	0.29	180	1	1.39	2,304	0.01		25.23
BL 14-1U	28.80	1.00	0.30	68.40	2.00	1.53	128.4	3	5.70	2,304	0.01		25.23
BL 15-1	24.00	0.50	0.07	132.00	1.00	0.89	216	8	44.69	326	0.01	1.96	8.12
BL 15-2D	24.00	0.50	0.08	74.40	2.00	1.75	115.2	4	8.54	403	0.01	2.42	9.18
BL 15-3D	38.40	1.50	0.82	135.60	2.00	3.22	224.4	4	16.86	538	0.01	3.23	10.85
BL 15-4	67.20	0.50	0.26	270.00	6.00	42.59	588	8	151.48	1,619	0.02		20.56
BL 15B-1U	27.60	0.50	0.13	51.60	3.00	3.10	69.6	4	6.77	326	0.02	1.96	8.12
BL 15C	28.00	1.00	0.36	36.00	1.50	0.96	72.00	1.50	3.16	64	0.02	0.38	3.16
Lower East Side Drainages													
ED 1-1	33.60	0.20	0.03	93.60	2.00	2.69	160.8	5	21.02	186	0.02	1.11	5.85
ED 2-1	49.20	1.00	1.25	117.60	1.00	2.02	266.4	4	45.84	4,614	0.07		37.74
ED 3-1	60.00	1.00	1.00	108.00	2.00	3.81	126	3	8.69	19,002	0.03		85.76
ED 3A-1	48.00	1.00	0.65	120.00	4.00	10.81	132	5	17.15	218	0.02	1.31	6.42
ED 3B-1	24.00	2.00	1.27	96.00	5.00	16.17	144	8	52.87	18,790	0.03		85.21
ED 3C	24.00	1.00	0.29	60.00	1.50	1.76	90	2	3.56	96	0.04	0.58	3.99
ED 4-1	19.20	0.25	0.02	88.80	1.00	0.70	160.8	2.5	5.82	486	0.01	2.92	10.23
ED 5-1	24.00	1.00	0.25	120.00	1.50	1.72	156	3	7.03	3,072	0.01		29.81
ED 5-2	30.00	0.50	0.10	180.00	2.00	4.20	228	3	10.43	3,072	0.01		29.81
ED 5a	24.00	1.00	0.29	36.00	1.50	0.86	60.00	2	2.34	294	0.04	1.77	7.65
ED 5b	24.00	1.00	0.29	96.00	1.50	2.37	156.00	2	9.02	3,070	0.04		29.79
ED 5C	12.00	1.00	0.14	48.00	1.50	1.16	96.00	2	5.48	1,000	0.04		15.55
ED 6-1	24.00	1.00	0.29	204.00	2.00	5.40	300	3	15.61	243	0.02	1.46	6.85
ED 6-2	18.00	0.50	0.07	72.00	2.00	1.95	156	4	13.44	122	0.02	0.73	4.58
ED 7-1	24.00	1.00	0.44	144.00	2.00	5.85	192	3	15.30	474	0.04	2.84	10.08
ED 7-2	12.00	0.50	0.05	132.00	2.00	3.65	204	3	11.10	474	0.02	2.84	10.08

Point #	Width of Low Flow Channel (in.)	Low Average Depth (in.)	Low Q (cfs)	Width of Mid Flow Channel (in.)	Mid Average Depth (in.)	Mid Q (cfs)	Width of High Flow Channel (in.)	High Average Depth (in.)	High Q (cfs)	Watershed Area (acres.)	Slope	Rational Q (cfs)	USGS Q (cfs)
ED 8-1	69.60	1.00	0.92	159.60	3.00	8.76	471.6	2	13.42	582	0.02	3.49	11.36
ED 8-2	33.60	0.50	0.16	80.40	1.00	0.79	175.2	1	1.74	192	0.02	1.15	5.97
ED 8-3	12.00	1.00	0.002	36.00	1.00	0.32	171.6	1	1.70	192	0.02	1.15	5.97
ED 9-1	44.40	0.50	0.16	96.00	0.50	0.23	288	4	22.21	1,619	0.01		20.56
ED 10-1	84.00	0.25	0.11	172.80	2.00	4.59	477.6	3	25.11	1,216	0.02		17.41
ED 11-1	26.40	0.25	0.04	79.20	0.50	0.27	132	3	8.76	122	0.03	0.73	4.58
Kane Springs Road Area Drainages													
KR 1-1	15.60	1.00	0.25	88.80	5.00	13.78	122.4	10	58.54	64	0.03	0.38	3.16
KR 2-1	18.00	1.00	0.29	80.40	0.50	0.29	128.4	2	4.55	64	0.03	0.38	3.16
KR 3-1	20.40	0.50	0.09	43.20	0.50	0.12	94.8	1	0.87	64	0.02	0.38	3.16
KR 4-1	32.40	0.50	0.17	60.00	2.00	2.08	100.8	3	6.90	64	0.03	0.38	3.16
Kane Springs Wash													
KS BOT	60.00	1.00	0.82	120.00	6.00	20.76	180	8	50.64	153,600	0.02		288.21
KS 1	111.60	1.00	1.54	247.20	4.00	22.70	333.6	10	138.61	167,040	0.02		302.57
Upper West Side Drainages													
C 2-1	10.00	1.00	0.17	48.00	2.00	1.86	84	5	14.66	110	0.04	0.66	4.32
C 3-1	34.80	1.50	1.37	79.20	3.00	6.66	123.6	6	32.56	110	0.05	0.66	4.32
C 4-1	22.99	1.00	0.42	123.96	4.00	15.56	216	6	53.59	160	0.04	0.96	5.37
C 5-1	36.00	2.00	2.86	117.60	3.00	12.69	158.4	4	27.61	160	0.07	0.96	5.37
C 6-1	15.96	2.00	0.83	30.96	4.00	3.39	170.64	5	30.42	160	0.04	0.96	5.37
C 7-1	30.00	1.50	1.10	86.40	3.00	6.81	165.6	8	65.78	64	0.04	0.38	3.16
C 8-1	27.96	1.50	0.97	84.00	2.00	3.26	112.8	8	41.71	1,866	0.04		22.32
C 9-1	18.00	1.00	0.44	156.00	6.00	51.88	192	24	582.72	7,465	0.07		49.88
C 10-1	18.96	1.00	0.32	48.00	4.00	5.17	192	6	43.29	150	0.03	0.90	5.17
C 11A-1	24.00	1.00	0.60	102.00	1.50	3.47	205.2	16.8	360.65	200	0.07	1.20	6.11

Point #	Width of Low Flow Channel (in.)	Low Average Depth (in.)	Low Q (cfs)	Width of Mid Flow Channel (in.)	Mid Average Depth (in.)	Mid Q (cfs)	Width of High Flow Channel (in.)	High Average Depth (in.)	High Q (cfs)	Watershed Area (acres.)	Slope	Rational Q (cfs)	USGS Q (cfs)
C 11B-1	30.00	0.50	0.24	84.00	5.00	20.03	264	12	275.43	100	0.07	0.60	4.09
C 12-1	42.00	0.50	0.30	214.80	5.00	46.59	348	8	165.26	2,354	0.05		25.54
C 12-2	24.00	1.00	0.50	144.00	3.00	12.87	240	5	50.24	2,654	0.05		27.38
C 13-1	25.20	1.50	0.92	144.00	4.00	18.78	285.6	20	517.22	3,112	0.04		30.03
C 14-1	9.00	0.50	0.08	20.00	1.00	0.37	24	3	2.52	90	0.09	0.54	3.85
C 14-2	14.00	0.50	0.12	60.00	1.50	2.20	96	3	11.11	175	0.09	1.05	5.66
C 14-3	16.00	1.00	0.42	96.00	2.00	5.63	144	4	26.57	300	0.08	1.80	7.73
C 14-4	35.00	1.50	1.83	48.00	3.00	5.19	144	6	50.72	320	0.08	1.92	8.03
C 14-5	10.00	1.00	0.25	60.00	2.00	3.39	120	3	13.48	354	0.08	2.12	8.51
C 15-1	15.00	1.50	0.47	48.00	2.00	1.74	144	3	10.51	3,476	0.03		32.02
C 15-2	42.00	0.50	0.22	60.00	3.00	4.04	252	5	41.29	3,476	0.03		32.02
C 16-1	30.00	0.50	0.18	72.00	3.00	5.44	120	5	21.23	1,159	0.04		16.93
C 16-2	16.00	1.50	0.53	48.00	2.00	1.82	120	4	14.57	1,159	0.04		16.93
C 16-3	23.00	1.50	0.77	96.00	2.00	3.67	300	3	22.86	4,634	0.04		37.83
C 16-4	29.00	0.50	0.16	120.00	2.00	4.56	180	3	13.46	4,834	0.03		38.77
C 16-PW	12.00	1.00	0.19	36.00	1.50	0.76	42	2	1.43	4,834	0.03		38.77
C 17-1	24.00	2.00	2.06	60.00	4.00	11.11	180	6	68.20	4,763	0.09		38.44
C 17-2	24.00	1.50	1.29	72.00	4.00	13.31	120	8	69.50	4,763	0.09		38.44
C 17-3	10.00	2.50	1.02	36.00	5.00	8.68	120	7	55.46	4,763	0.09		38.44
C 17-4	46.00	0.50	0.41	50.00	1.00	0.94	60	2	3.53	4,763	0.09		38.44
C 18-1	25.00	1.50	0.85	72.00	3.00	5.27	84	6	18.83	1,031	0.04		15.82
C 18-2	19.00	0.50	0.11	30.00	2.00	1.07	50	6	10.45	1,031	0.03		15.82
C 19-1	15.00	1.50	0.53	36.00	4.00	4.27	120	6	29.98	115	0.04	0.69	4.43
C 19-2	15.00	1.50	0.52	60.00	3.00	4.70	120	4	15.50	115	0.04	0.69	4.43
C 20-1	27.00	2.00	1.64	48.00	6.00	11.50	72	8	28.27	1,118	0.05		16.58
C 20-1	18.00	2.00	1.04	36.00	4.00	4.41	96	8	38.47	1,118	0.04		16.58
C 20-3	15.00	1.50	0.54	30.00	3.00	2.29	60	4	7.67	1,118	0.04		16.58
C 21-1	10.80	1.00	0.17	24.00	3.00	1.56	48	4	5.27	71	0.03	0.43	3.35

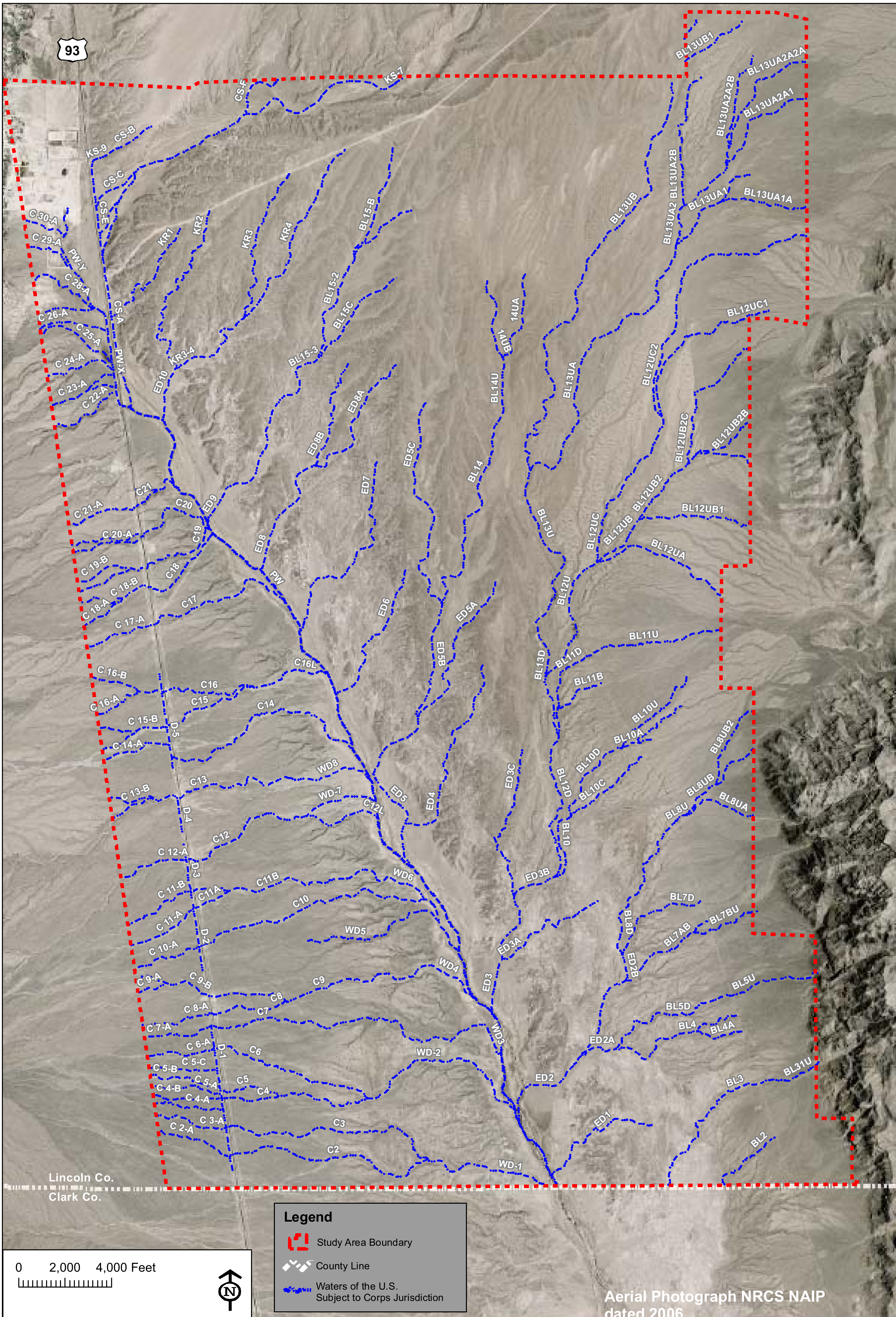
Point #	Width of Low Flow Channel (in.)	Low Average Depth (in.)	Low Q (cfs)	Width of Mid Flow Channel (in.)	Mid Average Depth (in.)	Mid Q (cfs)	Width of High Flow Channel (in.)	High Average Depth (in.)	High Q (cfs)	Watershed Area (acres.)	Slope	Rational Q (cfs)	USGS Q (cfs)
C 21-2	12.00	2.00	0.58	36.00	4.00	3.89	72	6	15.76	71	0.03	0.43	3.35
C 21-3	12.00	2.00	0.57	24.00	4.00	2.42	48	6	9.94	71	0.03	0.43	3.35
C 22-1	18.00	1.50	0.91	60.00	3.00	6.71	72	4	12.92	71	0.08	0.43	3.35
C 22-2	21.00	1.00	0.56	48.00	4.00	8.30	72	6	24.48	71	0.08	0.43	3.35
Lower West Side Drainages													
WD 1-1	39.60	0.50	0.21	122.40	1.00	1.35	196.8	4	21.54	1,124	0.03		16.64
WD 2-1	19.20	1.00	0.45	40.80	3.00	3.85	79.2	4	12.39	982	0.06	5.89	15.38
WD 3-1	24.00	1.00	0.34	60.00	6.00	10.35	120	9	41.86	536	0.02	3.22	10.83
WD 4-1	36.00	3.00	5.40	240.00	8.00	130.66	384	10	306.03	10,236	0.07		59.91
WD 5-1	60.00	3.00	5.65	108.00	6.00	21.37	144	10	65.67	485	0.03	2.91	10.22
WD 6-1	48.00	1.00	1.18	120.00	3.00	12.18	144	4	23.53	685	0.07	4.11	12.48
WD 7A-1	36.00	1.00	0.77	108.00	4.00	15.28	120	6	32.84	2,654	0.05		27.38
WD 7A-2	36.00	1.00	0.75	96.00	3.00	8.30	144	4.5	24.48	2,654	0.05		27.38
WD 8-1	60.00	1.00	1.14	120.00	3.00	9.39	216	3.5	22.09	3,412	0.04		31.68

Note:

- The underlined data points were estimated as described in Section 3.0 Delineation Methods
- Values for the Rational Method are only provided for watersheds less than one square mile in size.

Attachment 7

Delineation Map of Areas
Subject to Corps Jurisdiction
Under Section 404 of the Clean Water Act
Coyote Springs, Lincoln County, Nevada



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Attachment 7. Delineation Map of Areas Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act, Coyote Springs, Lincoln County, Nevada

Attachment 8

Acreage Calculations of Areas Subject to Corps Jurisdiction Under Section 404 of the Clean Water Act Coyote Springs, Lincoln County, Nevada

GIS Map Name	Channel Width (in.)	Channel Length (ft.) low-channel	Area (acres)
East of 93 and West of the Pahranagat Wash			
C10	19	12086	0.439
C11A	24	1703	0.078
C11B	30	6406	0.368
C12	42	6224	0.500
C12L	24	3505	0.161
C13	25	5898	0.282
C14	16	9913	0.303
C15	42	4386	0.352
C16	30	4401	0.253
C16L	16	3763	0.115
C17	24	6901	0.317
C18	25	4111	0.197
C19	15	3730	0.107
C2	10	9765	0.187
C20	27	4196	0.217
C21	12	2424	0.056
C22	21	1054	0.042
C3	35	10206	0.683
C4	23	6790	0.299
C5	36	2674	0.184
C6	16	7386	0.226
C7	30	8653	0.497
C8	28	3587	0.192
C9	18	7855	0.270
WD-1	40	5720	0.438
WD-2	19	8461	0.307
WD3	24	6351	0.292
WD4	36	5388	0.371
WD5	60	8552	0.982
WD6	48	4917	0.452

GIS Map Name	Channel Width (in.)	Channel Length (ft.) low-channel	Area (acres)
WD-7	36	3272	0.225
WD8	60	3547	0.407
East of the Pahranagat Wash			
BL10	38	3401	0.247
BL10A	19	3560	0.129
BL10B	11	694	0.015
BL10C	16	4386	0.134
BL10D	18	5144	0.177
BL10U	38	3799	0.276
BL11B	25	3578	0.171
BL11D	18	3045	0.105
BL11U	16	6302	0.193
BL12D	22	11741	0.494
BL12U	74	3911	0.554
BL12UA	12	6525	0.150
BL12UB	30	2709	0.155
BL12UB1	12	5160	0.118
BL12UB2	20	3305	0.126
BL12UB2A	12	2599	0.060
BL12UB2B	12	3509	0.081
BL12UB2C	12	6506	0.149
BL12UC	20	7443	0.285
BL12UC1	12	8251	0.189
BL12UC2	12	12724	0.292
BL13D	12	3761	0.086
BL13U	17	6652	0.216
BL13UA	30	13913	0.798
BL13UA1	15	2991	0.086
BL13UA1A	12	3794	0.087
BL13UA1B	12	1989	0.046
BL13UA2	12	1881	0.043
BL13UA2A	12	2654	0.061
BL13UA2A1	12	5022	0.115
BL13UA2A2	12	872	0.020
BL13UA2A2A	12	5579	0.128
BL13UA2A2B	12	4334	0.099
BL13UA2B	12	6292	0.144
BL13UB	11	21060	0.443
BL13UB1	6	3168	0.036
BL13UB2	6	1086	0.012
BL14	12	7504	0.172
BL14U	29	4830	0.268
BL14UA	22	4150	0.175
BL14UB	15	3677	0.106

GIS Map Name	Channel Width (in.)	Channel Length (ft.) low-channel	Area (acres)
BL15-1	24	3411	0.157
BL15-2	24	5011	0.230
BL15-3	38	3057	0.222
BL15-B	28	5450	0.292
BL15C	28	5088	0.273
BL2	18	3387	0.117
BL3	12	7665	0.176
BL31U	12	2238	0.051
BL4	14	6668	0.179
BL4A	8	2178	0.033
BL5D	23	6468	0.285
BL5U	11	4205	0.089
BL7A	12	856	0.020
BL7AB	22	3830	0.161
BL7AU	4	468	0.004
BL7B	5	828	0.008
BL7BU	5	2341	0.022
BL7D	10	4839	0.093
BL8D	14	7282	0.195
BL8U	22	560	0.024
BL8UA	12	3511	0.081
BL8UB	22	1986	0.084
BL8UB1	12	2494	0.057
BL8UB2	12	4089	0.094
ED1	34	6183	0.402
ED10	84	2443	0.393
ED2	49	4713	0.442
ED2A	49	1640	0.154
ED2B	49	5286	0.495
ED3	60	2412	0.277
ED3A	48	5638	0.518
ED3B	24	5201	0.239
ED3C	24	7318	0.336
ED4	19	11177	0.406
ED5	30	6228	0.357
ED5A	24	7611	0.349
ED5B	24	5278	0.242
ED5C	12	10077	0.231
ED6	24	7007	0.322
ED7	24	9737	0.447
ED8	70	5654	0.757
ED8A	34	6469	0.421
ED8B	12	5282	0.121
ED9	44	6753	0.568

GIS Map Name	Channel Width (in.)	Channel Length (ft.) low-channel	Area (acres)
KR1	16	5787	0.177
KR2	18	9231	0.318
KR3	20	7405	0.283
KR3-4	32	4460	0.273
KR4	32	9083	0.556
North of Kane Springs Road			
CS-A	56	23846	2.555
CS-B	52	2367	0.235
CS-C	75	2319	0.333
CS-D	88	1710	0.288
CS-E	66	4191	0.529
CS-F	95	2165	0.393
KS-5	96	533	0.098
KS-7	79	435	0.066
KS-9	28	605	0.032
West of 93			
Pahranagat Wash-X (west of 93)	72	4283	0.590
Pahranagat Wash-Y (west of 93)	22	5312	0.224
C10-A1	22	1000	0.042
C10-A2	12	2111	0.048
C11-A1	12	1000	0.023
C11-A2	15	2254	0.065
C11-B1	11	1000	0.021
C11-B2	15	2293	0.066
C12-A1	12	1000	0.023
C12-A2	18	2091	0.072
C13-A1	24	1000	0.046
C13-A2	12	1050	0.024
C13-B1	15	1000	0.029
C13-B2	24	2275	0.104
C14-A1	22	1000	0.042
C14-A2	24	2057	0.094
C15-A1	14	1000	0.027
C15-A2	18	766	0.026
C15-B1	12	1000	0.023
C15-B2	11	2017	0.042
C16-A1	15	1000	0.029
C16-A2	24	1227	0.056
C16-B1	15	1000	0.029
C16-B2	24	2218	0.102
C17-A1	18	1000	0.034
C17-A2	15	2036	0.058
C18-A1	11	1000	0.021

GIS Map Name	Channel Width (in.)	Channel Length (ft.) low-channel	Area (acres)
C18-A2	20	1102	0.042
C18-B1	24	1000	0.046
C18-B2	15	2217	0.064
C19-A1	24	1000	0.046
C19-A2	20	1542	0.059
C19-B1	18	1000	0.034
C19-B2	12	2108	0.048
C20-A1	19	1000	0.036
C20-A2	24	2036	0.093
C20-B1	26	1000	0.050
C20-B2	12	2135	0.049
C21-A1	10	1000	0.019
C21-A2	15	2119	0.061
C22-A	16	3291	0.101
C23-A1	18	1000	0.034
C23-A2	15	1994	0.057
C23-B	0	1408	0.043
C24-A1	10	1000	0.019
C24-A2	12	2206	0.051
C25-A1	15	1000	0.029
C25-A2	11	2857	0.060
C26-A1	15	1000	0.029
C26-A2	12	2096	0.048
C27-A1	11	1000	0.021
C27-A2	15	1508	0.043
C28-A1	22	1000	0.042
C28-A2	15	2462	0.071
C29-A1	24	1000	0.046
C29-A2	10	1302	0.025
C2-A1	24	1000	0.046
C2-A2	12	2491	0.057
C30-A1	15	1000	0.029
C30-A2	12	990	0.023
C3-A	15	3355	0.096
C4-A1	18	1000	0.034
C4-A2	12	2241	0.051
C4-B	22	3062	0.129
C5-A1	24	1000	0.046
C5-A2	15	2094	0.060
C5-B1	12	1000	0.023
C5-B2	15	2197	0.063
C5-C1	22	1000	0.042
C5-C2	12	2025	0.046
C6-A1	15	1000	0.029

GIS Map Name	Channel Width (in.)	Channel Length (ft.) low-channel	Area (acres)
C6-A2	12	2048	0.047
C7-A1	11	1000	0.021
C7-A2	9	2134	0.037
C8-A1	22	1000	0.042
C8-A2	12	2135	0.049
C9-A1	18	1000	0.034
C9-A2	20	338	0.013
C9-B1	12	1000	0.023
C9-B2	12	2513	0.058
D-1	24	6462	0.297
D-2	15	2899	0.083
D-3	20	2367	0.091
D-4	24	1434	0.066
D-5	22	4237	0.178
Pahranagat Wash (east of 93)			
Pahranagat Wash (bank-to-bank delineation)			15.000
TOTALS	23.49371	827875	53.744

Attachment 9
Aquatic Habitats Found Within the Area of Study And Regulated Under Section 404 of the Clean Water Act Coyote Springs, Lincoln County, Nevada

Land Form	National Wetlands Inventory Habitat Type	Hydrology Regime	Regulatory Data Regarding Potential Jurisdictional Status	Areas Delineated Technically Meeting EPA/Corps Wetlands Criteria (ac)	Areas Delineated Technically Meeting EPA/Corps Waters of the U.S. Criteria (ac)
Riverine	Ephemeral Drainages	Seasonally Flooded[1]	Bed and bank and OHWM present	0	54

1 Seasonally Flooded– NWI Definition: "Surface water is present for extended periods especially early in the growing season."

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: County/parish/borough: City:
Center coordinates of site (lat/long in degree decimal format): Lat. ° **Pick List**, Long. ° **Pick List**.
Universal Transverse Mercator:
Name of nearest waterbody:
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows:
Name of watershed or Hydrologic Unit Code (HUC):

- ☐ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- ☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- ☐ Office (Desk) Determination. Date:
- ☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Pick List** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

- ☐ Waters subject to the ebb and flow of the tide.
- ☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Pick List** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**

   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
   - ☐ TNWs, including territorial seas
   - ☐ Wetlands adjacent to TNWs
   - ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
   - ☐ Non-RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
   - ☐ Impoundments of jurisdictional waters
   - ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
   Non-wetland waters: linear feet: width (ft) and/or acres.
   Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Pick List**
   Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   - ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: .

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **Pick List**
Drainage area: **Pick List**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

☐ Riparian corridor. Characteristics (type, average width): .
☐ Wetland fringe. Characteristics: .
☐ Habitat for:
  ☐ Federally Listed species. Explain findings: .
  ☐ Fish/spawn areas. Explain findings: .
  ☐ Other environmentally-sensitive species. Explain findings: .
  ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
  Wetland size: acres
  Wetland type. Explain: .
  Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**
  Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
  ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
☐ Directly abutting
☐ Not directly abutting
  ☐ Discrete wetland hydrologic connection. Explain: .
  ☐ Ecological connection. Explain: .
  ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

☐ Riparian buffer. Characteristics (type, average width): .
☐ Vegetation type/percent cover. Explain: .
☐ Habitat for:
  ☐ Federally Listed species. Explain findings: .
  ☐ Fish/spawn areas. Explain findings: .
  ☐ Other environmentally-sensitive species. Explain findings: .
  ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.

☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

☐ Demonstrate that impoundment was created from "waters of the U.S.," or

☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or

☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.

☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.

☐ which are or could be used for industrial purposes by industries in interstate commerce.

☐ Interstate isolated waters. Explain: .

☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.

[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☐ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☐ U.S. Geological Survey map(s). Cite scale & quad name: .
☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☐ Photographs: ☐ Aerial (Name & Date): .
or ☐ Other (Name & Date): .
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

Attachment 11. Significant Nexus Test for the Pahranagat Wash						
Function [1]	**Description**	**Function Present within overall drainage area?**	**Significantly Affect a TNW?**			**Comments**
			L	**M**	**H**	
Groundwater Recharge/Discharge	Habitat serves as a groundwater recharge and/or discharge area. Recharge relates to the potential for the habitat to contribute water to an aquifer. Discharge relates to the potential for the habitat to serve as an area where groundwater can be discharged to the surface.	Present	**X**	**X**		Low flow channels hold water sufficiently long enough for infiltration into the groundwater system. No evidence that the high flow channels serve as a significant groundwater recharge area as flow is of very short duration across the channel surface and what water infiltrates likely is lost to either evaporation or transpiration. No evidence of groundwater discharge associated with either low, mid or high flow channels.
Floodflow Alteration (Storage & Desynchronization)	Habitat aids in the reduction of flood damage by attenuating floodwaters for prolonged periods following precipitation events.	Present	**X**	**X**		Low flow channels attenuate floodwaters for prolonged periods due to associated low flow velocities and rapid infiltration. No evidence that high flow channels significantly attenuate flood flow given observable damage to structures and adjacent landscape.
Fish and Shellfish Habitat	WOUS provides seasonal or permanent habitat for fish and/or shellfish.	Not Present				Ponded water not present for a long enough duration of time
Sediment/Toxicant/ Pathogen Retention	Habitat aids in the prevention of the degradation of water quality by trapping	Present	**X**			Fine grained sediments and low levels of organic matter associated with low flow

Attachment 11. Significant Nexus Test for the Pahranagat Wash						
Function [1]	**Description**	**Function Present within overall drainage area?**	**Significantly Affect a TNW?**			**Comments**
			L	**M**	**H**	
	sediments, toxicants or pathogens.					channels hold certain toxicants. Mid and high flow channels have primarily coarse grained material associated with them and the contact time with vegetation is too short.
Nutrient Removal/Retention/ Transformation	Habitat aids in the prevention of adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.	Present	**X**			No evidence that mid or high flow channels significantly aid in the prevention of adverse effects of excess nutrients entering aquifers or ponded surface waters. Contact time with vegetation is too short.
Production Export (Nutrient)	Habitat produces food or usable products for human or other living organisms.	Present	**X**			No evidence that mid or high flow channels significantly impact the production of food or usable products for human or other living organisms due to the frequency of flow events. Low flow channels at the site have been observed to consistently transport every one or two years transport fine organic particles consisting of leaf detritus collected from stormwater surface run off from adjacent landscape into the channel.
Sediment/Shoreline Stabilization	Habitat aids in the stabilization of stream banks and shorelines against erosion.	Present	**X**			No evidence that mid or high flow channels significantly aid in the stabilization of stream banks against erosion given observable damage to

Attachment 11. Significant Nexus Test for the Pahranagat Wash						
Function [1]	**Description**	**Function Present within overall drainage area?**	**Significantly Affect a TNW?**			**Comments**
			L	**M**	**H**	
						stream banks
Wildlife Habitat	WOUS provides habitat for various types and populations of animals. Both resident and/or migrating species are considered.	Present	**X**			Observations on-site indicate that low channels have areas that pond after flow events. Mid and high flow channels lack areas which pond.

1 Significantly affect to the physical, chemical, and biological integrity of navigable waters. Activities that result in discharges of pollutants into these waters can adversely affect the physical, chemical, and biological integrity of navigable waters. These factors include a) the capacity to carry pollutants or flood water into a TNW, b) the provision of habitat for species that are present in the downstream TNW, c) the capacity of transferring nutrients and organic carbon to a TNW, or d) other "relationships to the physical, chemical, or biological integrity of the TNW.

Attachment 12. Significant Nexus Test for the Northern, Northeastern and Eastern Tributaries to the Pahranagat Wash						
Function [1]	Description	Function Present within overall drainage area?	Significant Affect to a TNW?			Comments
			L	M	H	
Groundwater Recharge/Discharge	Habitat serves as a groundwater recharge and/or discharge area. Recharge relates to the potential for the habitat to contribute water to an aquifer. Discharge relates to the potential for the habitat to serve as an area where groundwater can be discharged to the surface.	Present	X			Low flow channels hold water sufficiently long enough for infiltration into the groundwater system. No evidence that mid or high flow channels serve as a significant groundwater recharge area as flow is of very short duration across the channel surface and what water infiltrates likely is lost to either evaporation or transpiration. No evidence of groundwater discharge associated with either low, mid or high flow channels.
Floodflow Alteration (Storage & Desynchronization)	Habitat aids in the reduction of flood damage by attenuating floodwaters for prolonged periods following precipitation events.	Present	X			Low flow channels attenuate floodwaters for prolonged periods due to associated low flow velocities and rapid infiltration. No evidence that mid and high flow channels significantly attenuate flood flow given observable damage to structures and adjacent landscape.
Fish and Shellfish Habitat	WOUS provides seasonal or permanent habitat for fish and/or shellfish.	Not Present				Ponded water not present for a long enough duration of time.
Sediment/Toxicant/ Pathogen Retention	Habitat aids in the prevention of the degradation of water quality by trapping	Present	X			Fine grained sediments and low levels of organic matter associated with low flow

Attachment 12. Significant Nexus Test for the Northern, Northeastern and Eastern Tributaries to the Pahranagat Wash						
Function [1]	**Description**	**Function Present within overall drainage area?**	**Significant Affect to a TNW?**			**Comments**
			L	**M**	**H**	
	sediments, toxicants or pathogens.					channels hold certain toxicants. Mid and high flow channels have primarily coarse grained material associated with them and the contact time with vegetation is too short.
Nutrient Removal/Retention/ Transformation	Habitat aids in the prevention of adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.	Present	X			No evidence that mid or high flow channels significantly aid in the prevention of adverse effects of excess nutrients entering aquifers or ponded surface waters. Contact time with vegetation is too short.
Production Export (Nutrient)	Habitat produces food or usable products for human or other living organisms.	Present	X			No evidence that mid or high flow channels significantly impact the production of food or usable products for human or other living organisms due to the frequency of flow events. Low flow channels at the site have been observed to consistently transport every one or two years transport fine organic particles consisting of leaf detritus collected from stormwater surface run off from adjacent landscape into the channel.
Sediment/Shoreline Stabilization	Habitat aids in the stabilization of stream banks and shorelines against erosion.	Present	X			No evidence that mid and high flow channels significantly aid in the stabilization of stream banks against

Attachment 12. Significant Nexus Test for the Northern, Northeastern and Eastern Tributaries to the Pahranagat Wash						
Function [1]	**Description**	**Function Present within overall drainage area?**	**Significant Affect to a TNW?**			**Comments**
			L	**M**	**H**	
						erosion given observable damage to stream banks
Wildlife Habitat	WOUS provides habitat for various types and populations of animals. Both resident and/or migrating species are considered.	Present	**X**			Observations on-site indicate that low channels have areas that pond after flow events. Mid and high flow channels lack areas which pond.

1 Significantly affect to the physical, chemical, and biological integrity of navigable waters. Activities that result in discharges of pollutants into these waters can adversely affect the physical, chemical, and biological integrity of navigable waters. These factors include a) the capacity to carry pollutants or flood water into a TNW, b) the provision of habitat for species that are present in the downstream TNW, c) the capacity of transferring nutrients and organic carbon to a TNW, or d) other “relationships to the physical, chemical, or biological integrity of the TNW.

Attachment 13. Significant Nexus Test for Western Tributaries to the Pahranagat Wash						
Function [1]	**Description**	**Function Present within overall drainage area?**	**Significant Affect to a TNW?**			**Comments**
			L	**M**	**H**	
Groundwater Recharge/Discharge	Habitat serves as a groundwater recharge and/or discharge area. Recharge relates to the potential for the habitat to contribute water to an aquifer. Discharge relates to the potential for the habitat to serve as an area where groundwater can be discharged to the surface.	Present	**X**			Low flow channels hold water sufficiently long enough for infiltration into the groundwater system. No evidence that mid or high flow channels serve as a significant groundwater recharge area as flow is of very short duration across the channel surface and what water infiltrates likely is lost to either evaporation or transpiration. No evidence of groundwater discharge associated with either low, mid or high flow channels.
Floodflow Alteration (Storage & Desynchronization)	Habitat aids in the reduction of flood damage by attenuating floodwaters for prolonged periods following precipitation events.	Present	**X**			Low flow channels attenuate floodwaters for prolonged periods due to associated low flow velocities and rapid infiltration. No evidence that mid and high flow channels significantly attenuate flood flow given observable damage to structures and adjacent landscape.
Fish and Shellfish Habitat	WOUS provides seasonal or permanent habitat for fish and/or shellfish.	Not Present				Ponded water not present for a long enough duration of time
Sediment/Toxicant/ Pathogen Retention	Habitat aids in the prevention of the degradation of water quality by trapping	Present	**X**			Fine grained sediments and low levels of organic matter associated with low flow

Attachment 13. Significant Nexus Test for Western Tributaries to the Pahranagat Wash						
Function [1]	**Description**	**Function Present within overall drainage area?**	**Significant Affect to a TNW?**			**Comments**
			L	**M**	**H**	
	sediments, toxicants or pathogens.					channels hold certain toxicants. Mid and high flow channels have primarily coarse grained material associated with them and the contact time with vegetation is too short.
Nutrient Removal/Retention/ Transformation	Habitat aids in the prevention of adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.	Present	**X**			No evidence that mid or high flow channels significantly aid in the prevention of adverse effects of excess nutrients entering aquifers or ponded surface waters. Contact time with vegetation is too short.
Production Export (Nutrient)	Habitat produces food or usable products for human or other living organisms.	Present	**X**			No evidence that mid or high flow channels significantly impact the production of food or usable products for human or other living organisms due to the frequency of flow events. Contact time with vegetation is too short. Low flow channels at the site have been observed to consistently transport every one or two years transport fine organic particles consisting of leaf detritus collected from stormwater surface run off from adjacent landscape into the channel.
Sediment/Shoreline Stabilization	Habitat aids in the stabilization of stream banks and shorelines against erosion.	Present	**X**			No evidence that mid and high flow channels significantly aid in the stabilization of stream banks against erosion given observable damage to stream

Attachment 13. Significant Nexus Test for Western Tributaries to the Pahranagat Wash						
Function [1]	**Description**	**Function Present within overall drainage area?**	**Significant Affect to a TNW?**			**Comments**
			L	**M**	**H**	
						banks
Wildlife Habitat	WOUS provides habitat for various types and populations of animals. Both resident and/or migrating species are considered.	Present	**X**			Observations on-site indicate that low channels have areas that pond after flow events. Mid and high flow channels lack areas which pond.
1 Significantly affect to the physical, chemical, and biological integrity of navigable waters. Activities that result in discharges of pollutants into these waters can adversely affect the physical, chemical, and biological integrity of navigable waters. These factors include a) the capacity to carry pollutants or flood water into a TNW, b) the provision of habitat for species that are present in the downstream TNW, c) the capacity of transferring nutrients and organic carbon to a TNW, or d) other “relationships to the physical, chemical, or biological integrity of the TNW.						